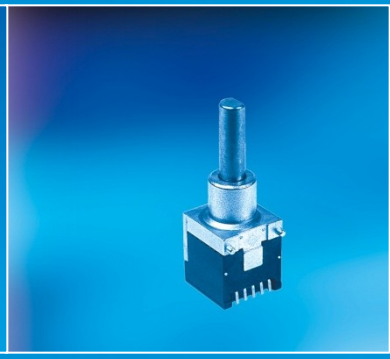
50 years
1960-2010

Your Solution Partner



About Elma
Elma in Brief

Elma is a leading global manufacturer of products of electronic packaging system solutions and high precision rotary switches for demanding applications

- Experience since 1960
- Facilities in 9 countries on 3 continents (Europe, America & Asia)
- Representatives in over 20 countries
- Approx. 750 employees worldwide

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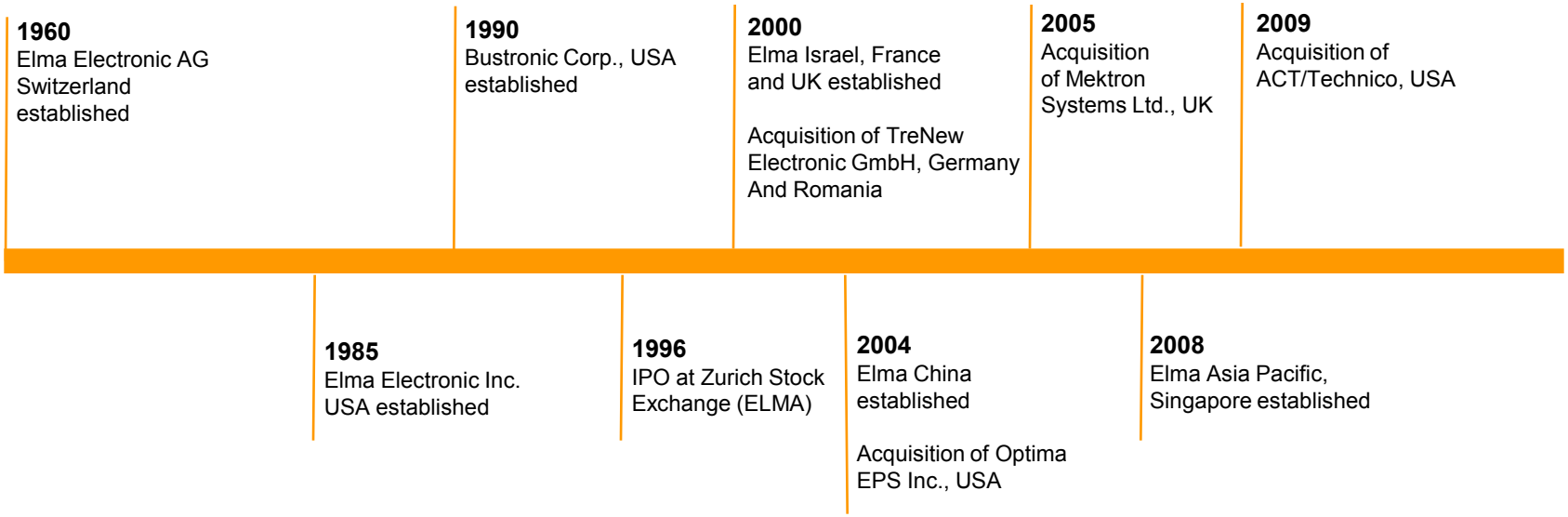
About Elma
Company History

ELMA 50 years 1960-2010
Your Solution Partner



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Elma Companies

Your Partner. Worldwide.

ELMA 50 years 1960-2010
Your Solution Partner

Developing and manufacturing countries

Distribution partners

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Elma Companies
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Switzerland
Competence Center
Enclosures, Switches

USA
Competence Center
Backplanes, Systems,
Cabinets

Germany
Competence Center
Backplanes, Systems

UK
Competence Center
Systems

France

Israel

China

Romania

Singapore

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About Elma
Product Applications

ELMA 50 years 1960-2010
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Military/Aerospace	Scientific/Education	Industrial
Communications	Instrumentation	Broadcast/Audio
Transportation	Medical	IT/Data Center

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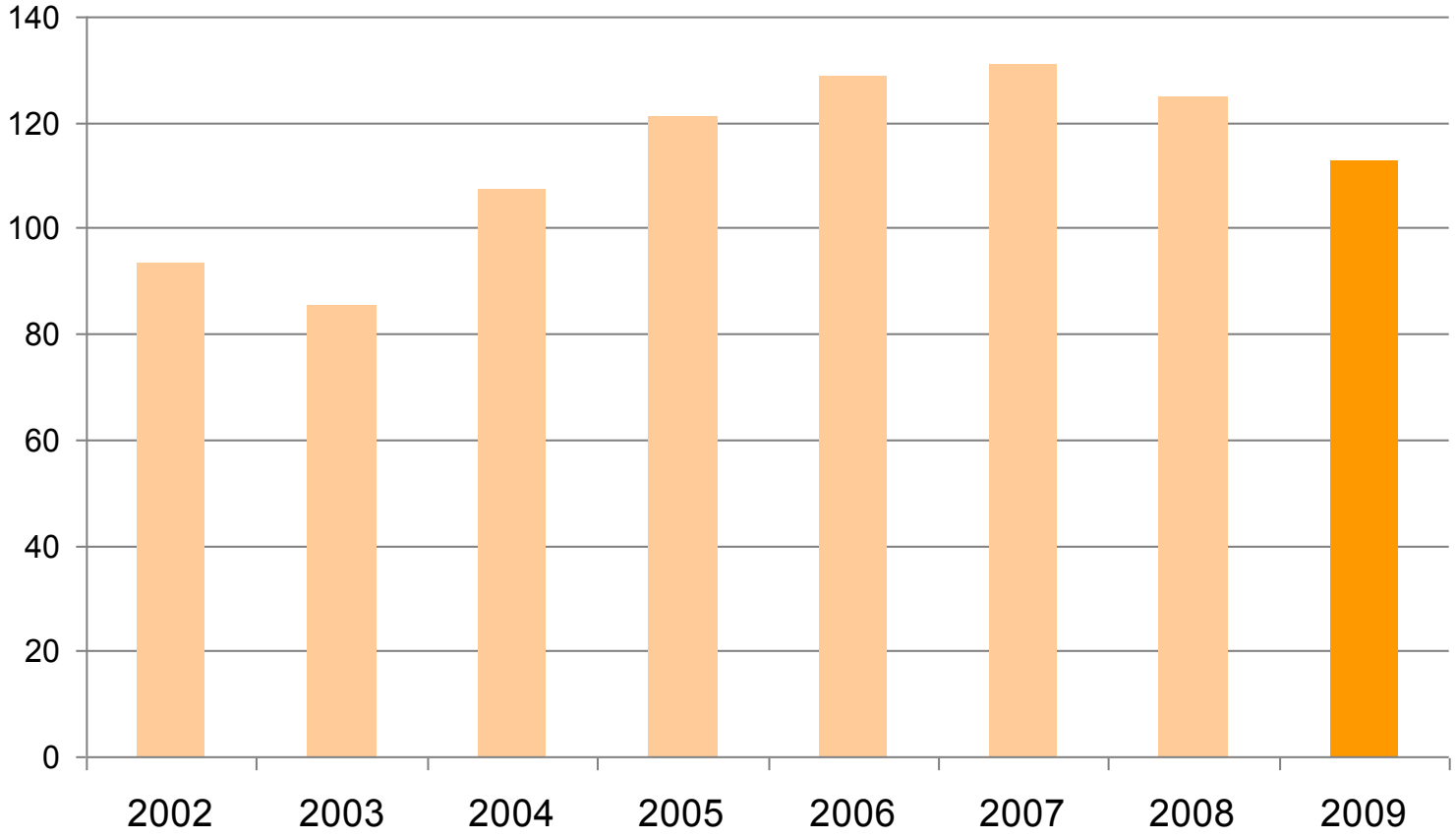
Elma Summary
Turnover in Mio. CHF



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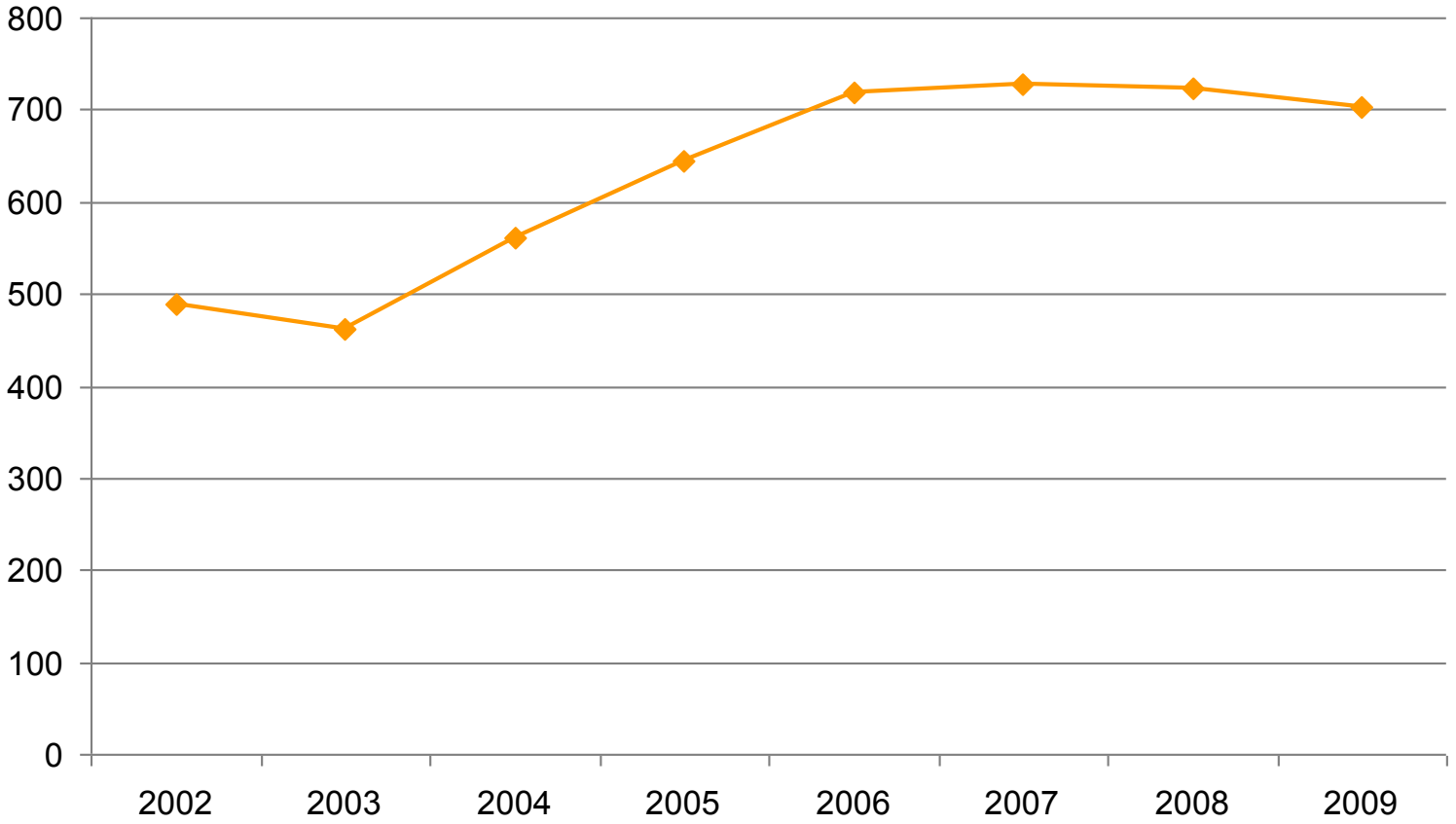
Elma Summary
Change of Employees



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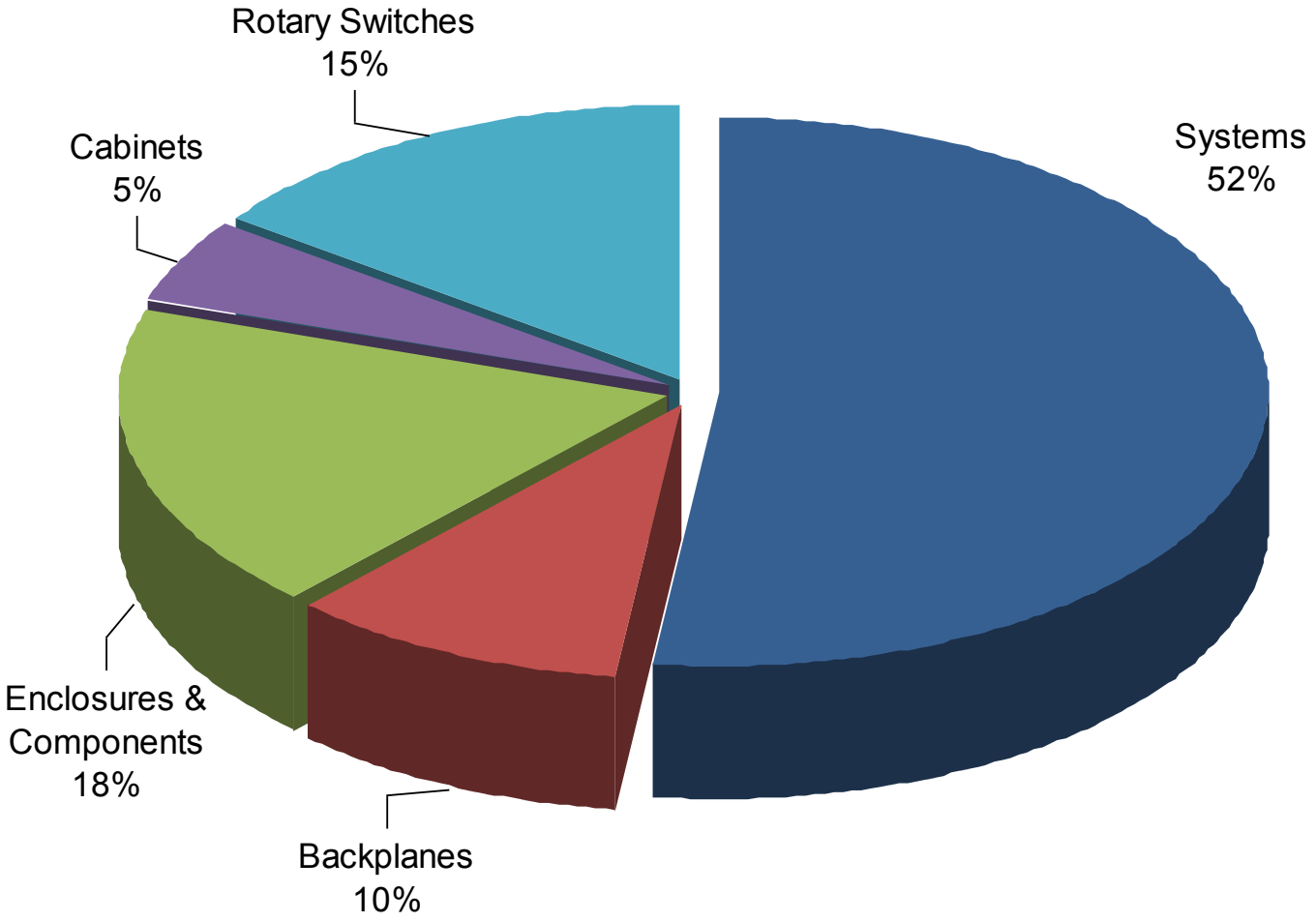
Summary per Product Line
Based on turnover in 2009

ELMA 50 years 1960-2010
Your Solution Partner



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Summary per Region
Based on turnover in 2009

ELMA 50 years 1960-2010
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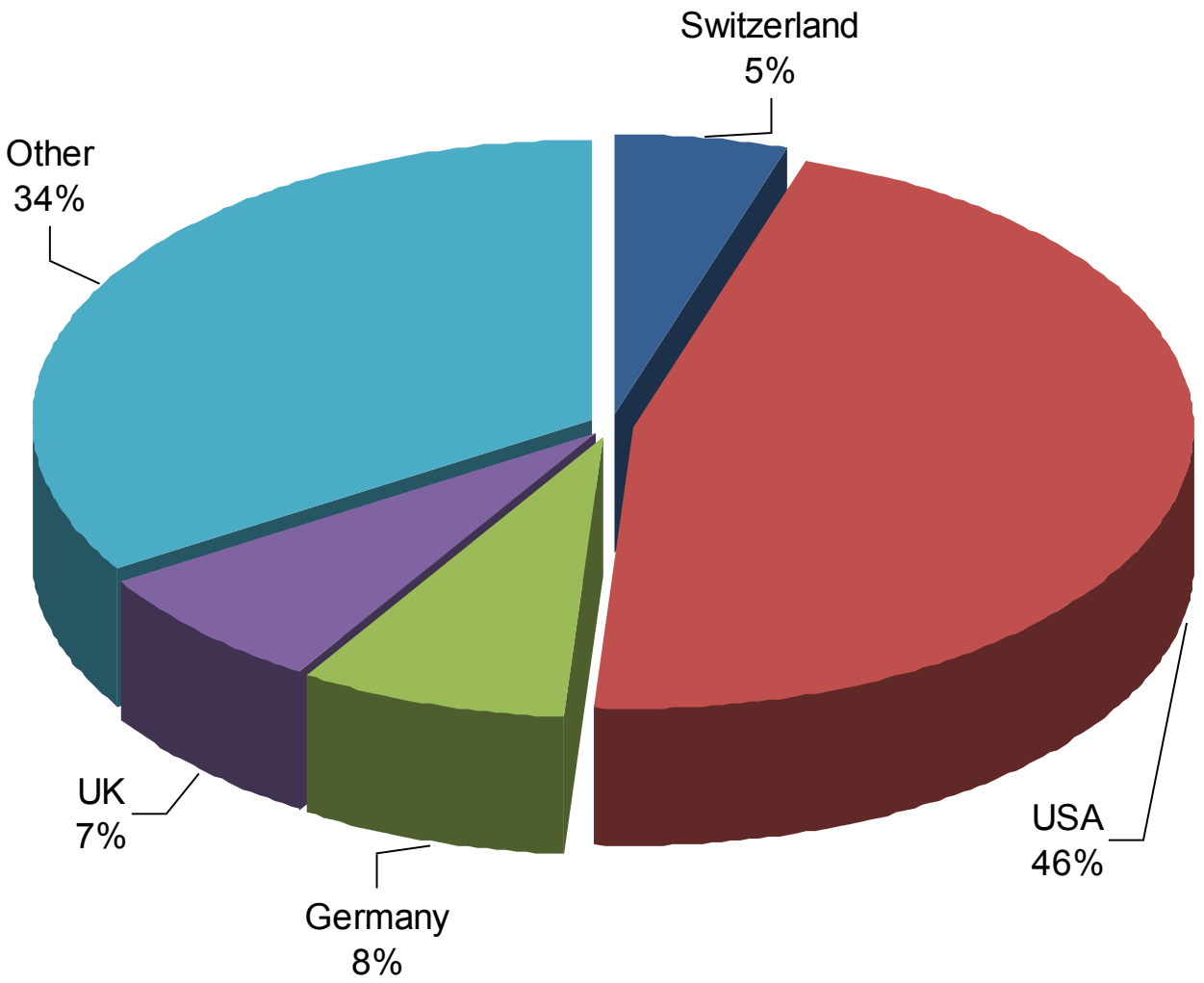

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Summary per Customer Segment
Based on turnover in 2009

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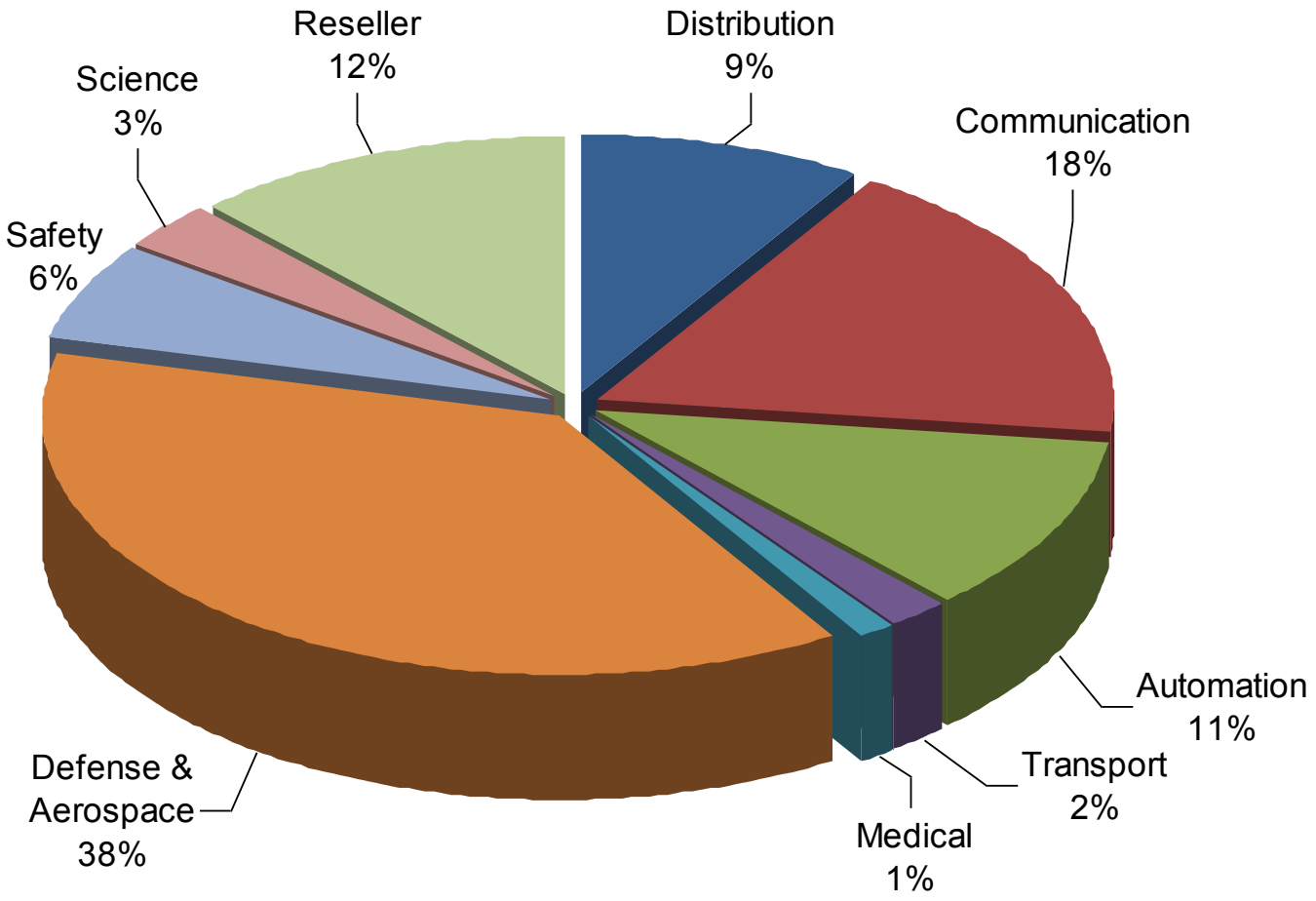

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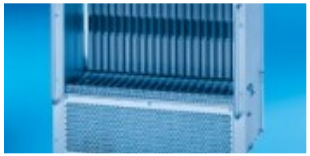
About Elma
Why choose Elma

ELMA 50 years 1960-2010
Your Solution Partner

- **Experience**
  Extensive practical experience in packaging electronic systems is used to minimise the time taken to develop new customised solutions without compromising system performance or reliability.
- **Flexibility**
  Elma tailors solutions to individual applications to ensure fast and cost-effective results.
- **Compatibility**
  Because the two key electromechanical components – enclosures and backplanes – are made in-house, Elma guarantees compatibility, consistency and reliability.
- **Global Network**
  With manufacturing in Europe, the US and Asia, customers benefit from local service, backed by global resources.

Your Solution Partner



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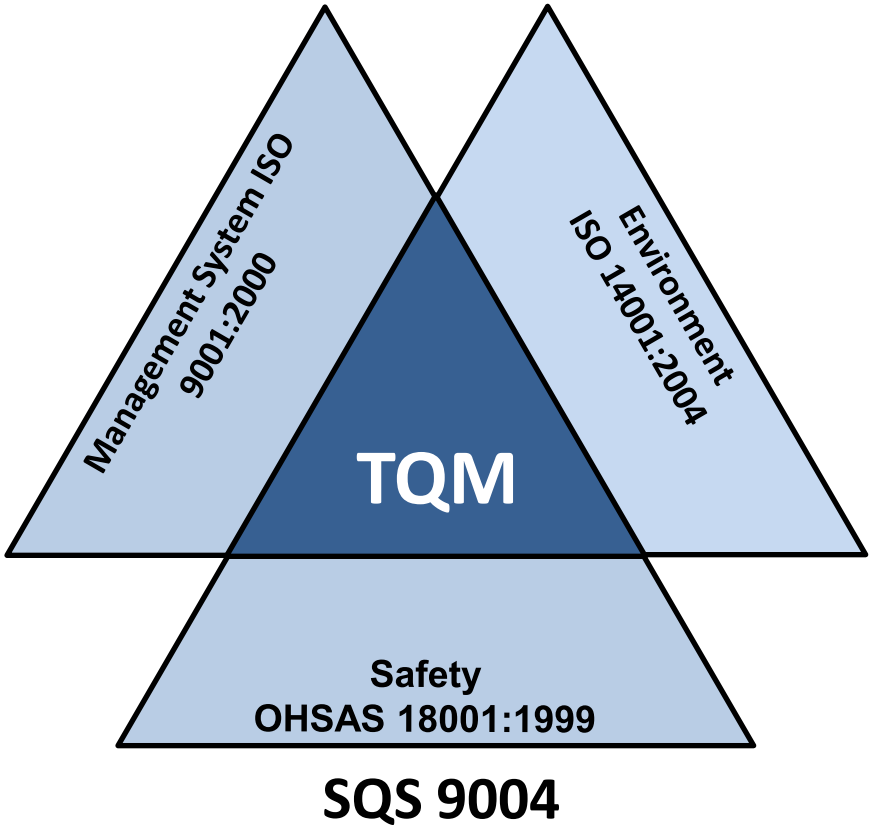
Elma Switzerland
Total Quality Management



Our TQM (Total Quality Management) describes the company's processes, shows the implementation of ISO-norms and demands of our industry sector. Further it refers to operative instructions in the practice and constant improvement as well as the co-operation of all employees, customers, suppliers and other partners.

Environment
We avoid environmental pollution and waists of all types and encourage all actions to a sensible conservation of nature and natural resources.

Safety
We are aware of dangers and risks that come with the daily business and consider all precautions. In case of events we give the necessary assistance.

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Elma Switzerland
Quality Inspection

Inspection is made as close to the manufacturing point as possible as this allows two way information. Inspection takes place at the manufacturing phase in the form of:

- Pattern inspection
- First/last article inspection
- Goods inward test acceptance inspection
- In process inspection (e.g.. automated inspections, process monitoring)
- Introspectiveness
- Ongoing inspections
- Final inspections

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Elma Switzerland
Certification

ELMA 50 years 1960-2010
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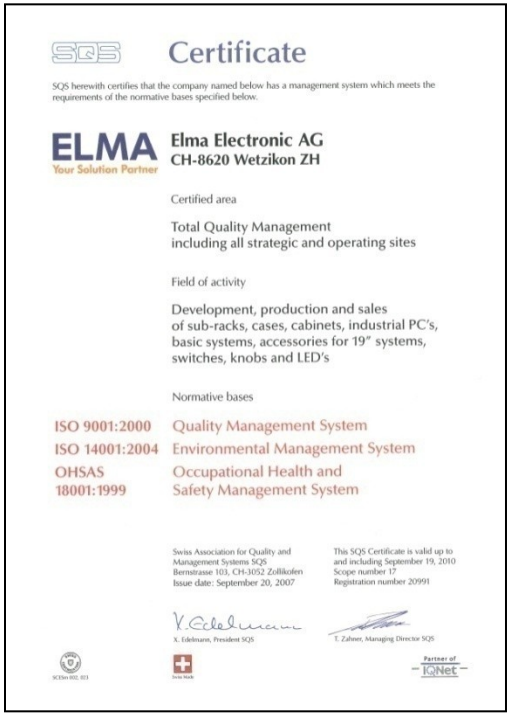
TÜV

PCI INDUSTRIAL PICMG COMPUTERS

ANSI



SQS Certificate

SQS herewith certifies that the company named below has a management system which meets the requirements of the normative bases specified below.

ELMA Your Solution Partner
Elma Electronic AG
CH-8620 Wetzikon ZH

Certified area

Total Quality Management
including all strategic and operating sites

Field of activity

Development, production and sales
of sub-racks, cases, cabinets, industrial PC's,
basic systems, accessories for 19" systems,
switches, knobs and LED's

Normative bases

ISO 9001:2000	Quality Management System
ISO 14001:2004	Environmental Management System
OHSAS 18001:1999	Occupational Health and Safety Management System

Swiss Association for Quality and Management Systems SQS
Bernstrasse 103, CH-3052 Zollikofen
Issue date: September 20, 2007

This SQS Certificate is valid up to and including September 19, 2010
Scope number 17
Registration number 20991

X. Edelmann, President SQS

T. Zahner, Managing Director SQS

Partner of IQNet

IQNet
THE INTERNATIONAL CERTIFICATION NETWORK

CERTIFICATE

IQNet and SQS
hereby certify that the organization

Elma Electronic AG
CH-8620 Wetzikon ZH

Certified area

Total Quality Management including all strategic and operating sites

Field of activity

Development, production and sales of sub-racks, cases, cabinets, industrial PC's, basic systems, accessories for 19" systems, switches, knobs and LED's

has implemented and maintains a
Management System
which fulfills the requirements of the following standards

ISO 9001:2000 / ISO 14001:2004 / OHSAS 18001:1999

Scope No: 17
Issued on: 2007-09-20
Validity date: 2010-09-19
Registration Number: ***CH-20991***

René Wasmer
President of IQNet

Theodor Zahner
Managing Director SQS

*IQNet Partners**:
AENOR *Spain* AFAQ AFNOR *France* AIB-Vincotte International *Belgium* ANCE *Mexico* APCER *Portugal* CISQ *Italy* CQC *China* CQM *China* CQS *Czech Republic* Cro Cert *Croatia* DQS *Germany* DS *Denmark* ELOT *Greece* FCAV *Brazil* FONDONORMA *Venezuela* HKQAA *Hong Kong China* ICONTEC *Colombia* IMNC *Mexico* Inspecta Certification *Finland* IRAM *Argentina* JQA *Japan* KFQ *Korea* MSZT *Hungary* Nemko AS *Norway* NSAI *Ireland* PCBC *Poland* QMI *Canada* Quality Austria *Austria* RR *Russia* SAI Global *Australia* SII *Israel* SIQ *Slovenia* SIRIM QAS International *Malaysia* SQS *Switzerland* SRAC *Romania* TEST St Petersburg *Russia* YUQS *Serbia*
IQNet is represented in the USA by: AFAQ AFNOR, AIB-Vincotte International, CISQ, DQS, NSAI Inc., QMI and SAI Global
* The list of IQNet partners is valid at the time of issue of this certificate. Updated information is available under www.iqnet-certification.com

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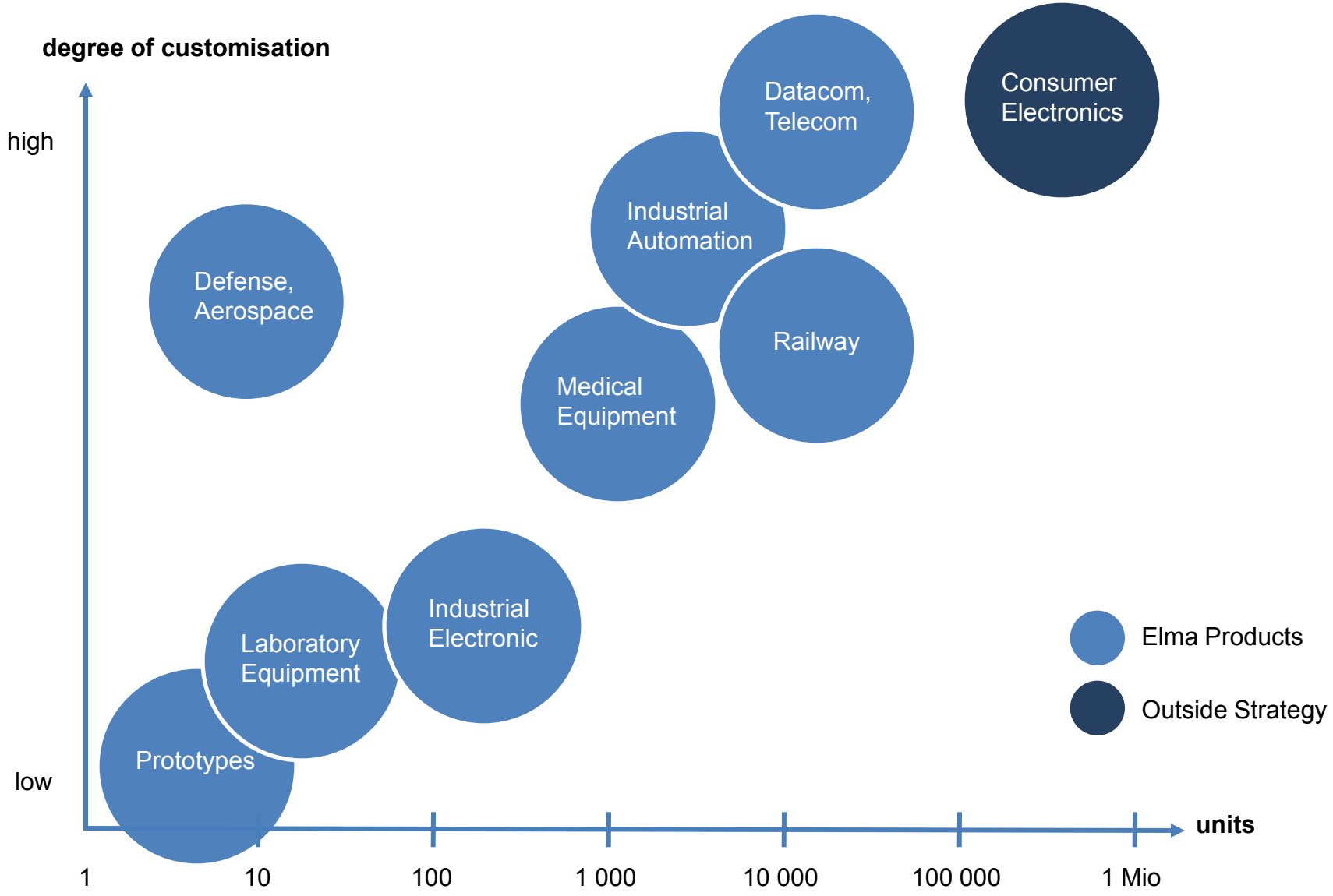
Customer Segments
Electronic Packaging

ELMA 50 years 1960-2010
Your Solution Partner



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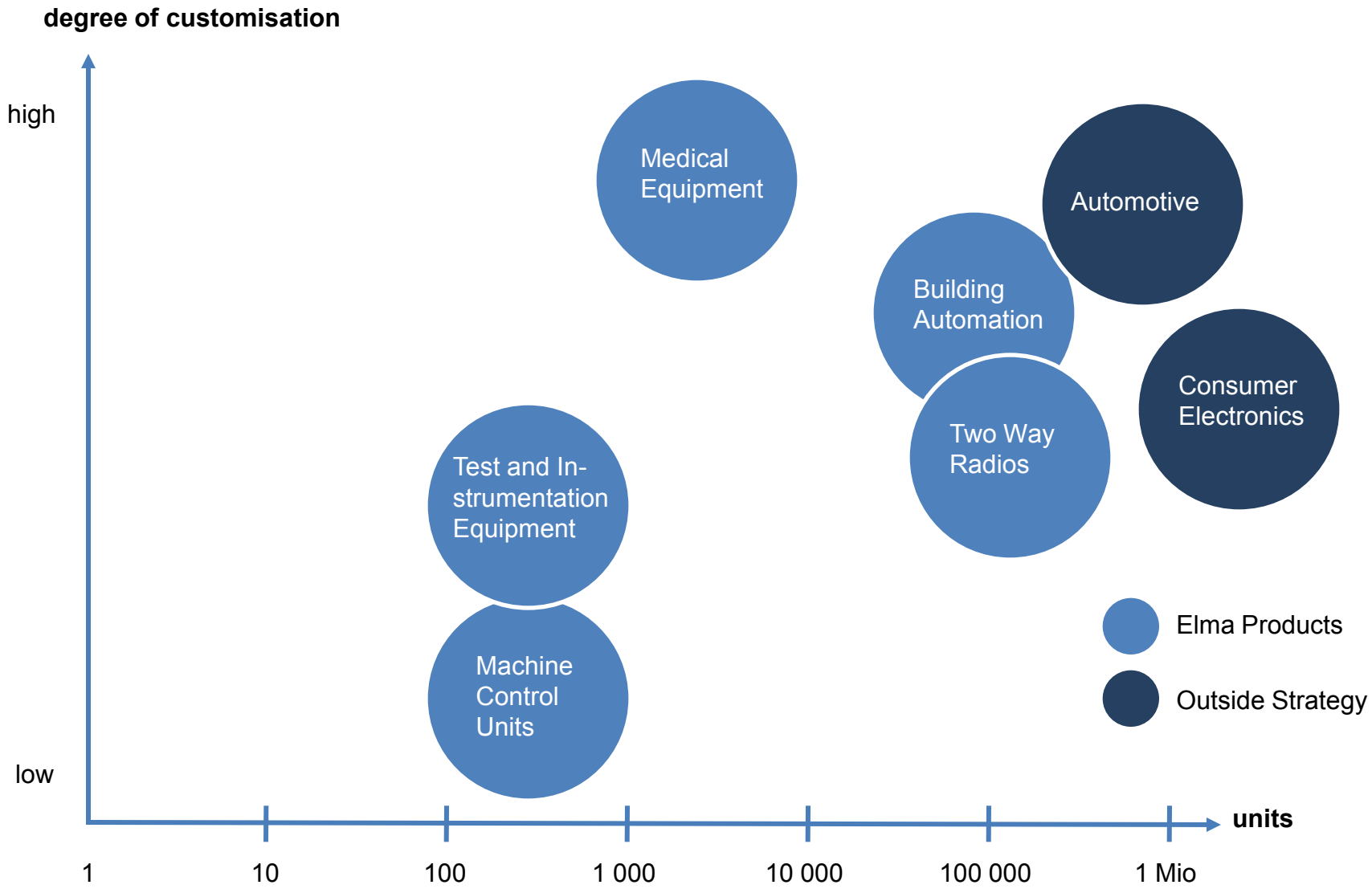
Customer Segments
Rotary Switches

ELMA 50 years 1960-2010
Your Solution Partner



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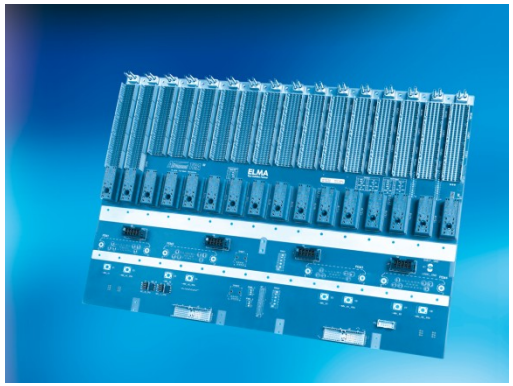
Product Overview
Elma Product Lines

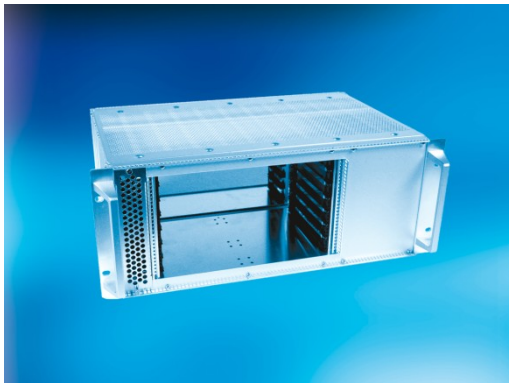
ELMA 50 years 1960-2010
Your Solution Partner

Electronic Packaging

System Platforms



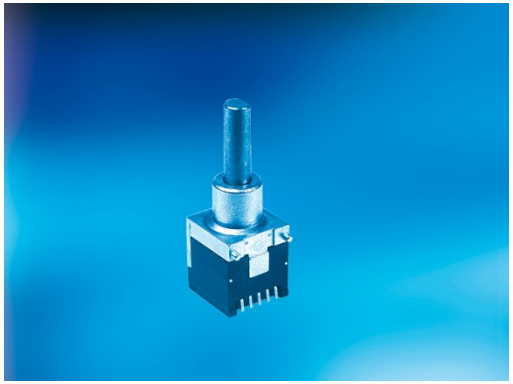
Backplanes



Enclosures & Components

Cabinets

Rotary Switches



Rotary Switches

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System Platforms
Products & Technologies

ELMA 50 years 1960-2010
Your Solution Partner

- Broad Range of Products:
  - MicroTCA
  - AdvancedTCA
  - CompactPCI, PICMG 2.16
  - VME/VME64x, VITA 31.1
  - VXS, VPX
  - PXI/VXI

- Design Capabilites for:
  - Modified Standards
  - Customised Solutions

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System Platforms
Rugged Enclosures

ELMA 50 years 1960-2010
Your Solution Partner

- ATR, rack-mount, and custom designs
- ARINC 404A and ARINC 600
- MIL-STD-810 for demanding environments
- Full EMC compliance

- Specialised Skills:
  - Emphasis on thermal management
  - Convection, indirect convection cooled
  - Conduction and liquid cooled
  - All bus architectures supported

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Product Overview
Elma Product Lines

ELMA 50 years 1960-2010
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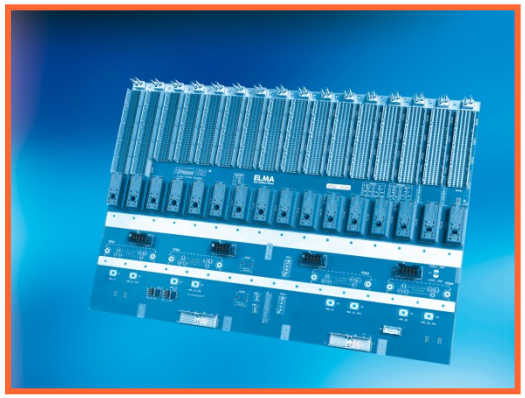
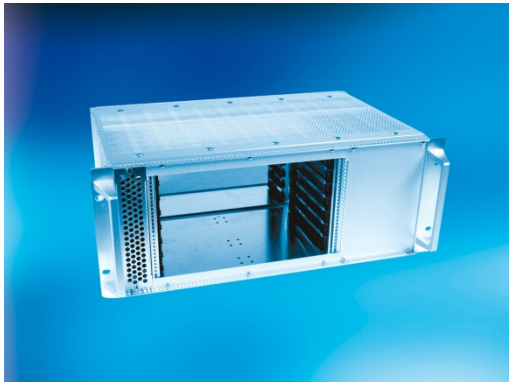
Electronic Packaging

System Platforms



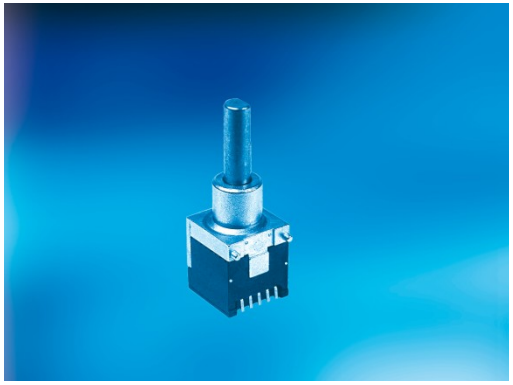
Backplanes



Enclosures & Components

Cabinets

Rotary Switches



Rotary Switches

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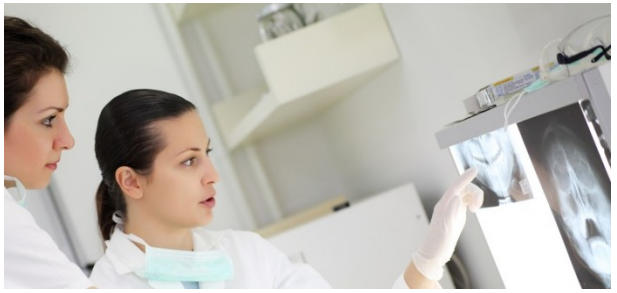
Backplanes
Product Features

ELMA 50 years 1960-2010
Your Solution Partner

- Speed
  - Avionic instrumentation
  - Weapon management system
  - Vehicle control system

- Reliability
  - Robotics
  - Telecommunication
  - Computer tomography



- Availability
  - Infrastructure network management
  - Synchrotron

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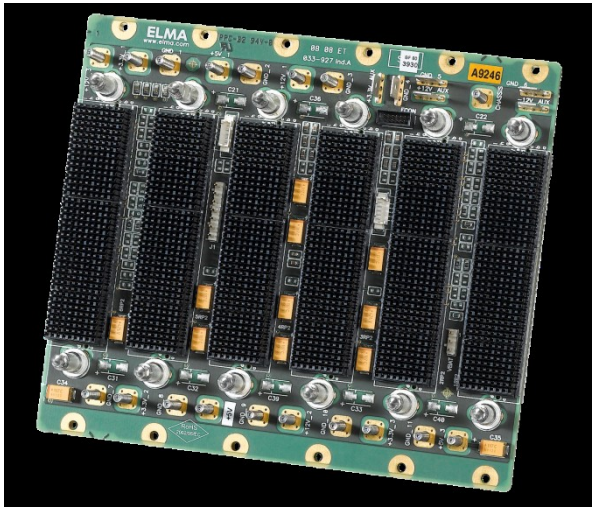
Backplanes
Products & Technologies

ELMA 50 years 1960-2010
Your Solution Partner

- Broad Range of Products:
  - MicroTCA
  - AdvancedTCA
  - CompactPCI, PICMG 2.16
  - VME/VME64x, VITA 31.1
  - VXS, VPX
  - PXI/VXI



- Design Capabilities for:
  - Modified standards
  - Customised solutions
  - Full custom

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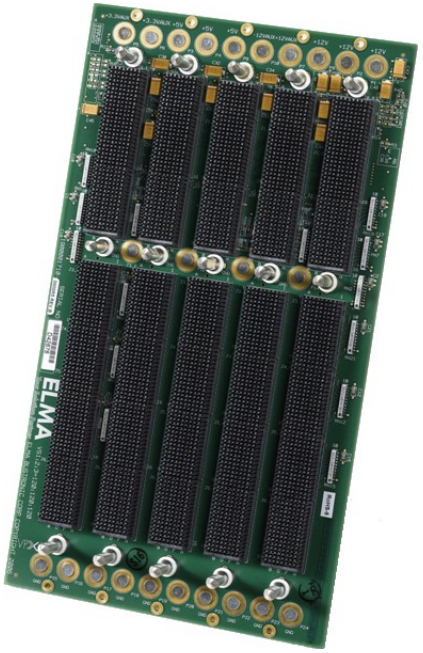
Backplanes
Products & Complexity

ELMA 50 years 1960-2010
Your Solution Partner

- Design Capabilities for:
  - Up to 30 PCB layers
  - Thickness up to 8 mm
  - PCB size up to 600 x 800 mm
  - Active parts on the backplane
  - Copper to optic conversion
  - Bridge circuitry on the backplane
  - Bridge modules (cPCI, cPCI EXP.0)
  - Rigid-flex backplanes



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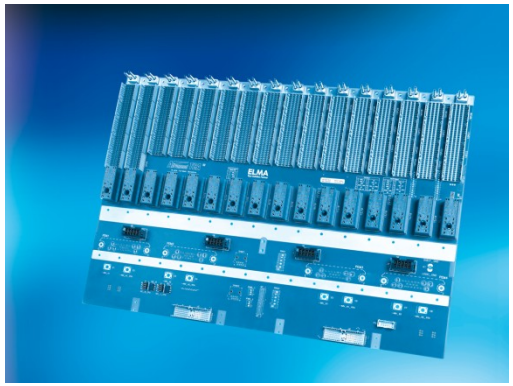
Product Overview
Elma Product Lines

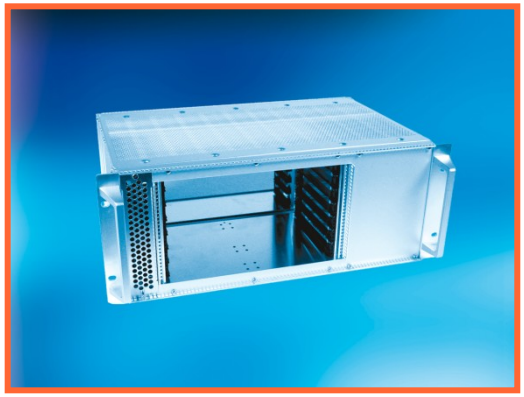
ELMA 50 years 1960-2010
Your Solution Partner

Electronic Packaging

System Platforms



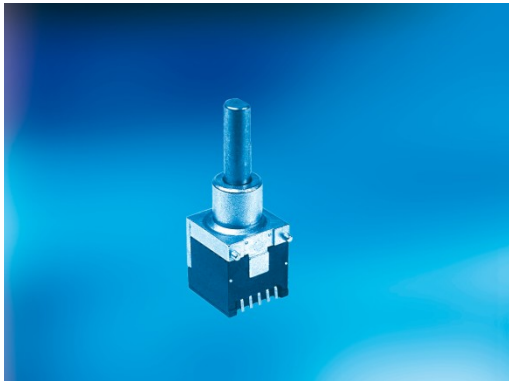
Backplanes



Enclosures & Components

Cabinets

Rotary Switches



Rotary Switches

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Enclosures & Components
Market Segments

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Defence / Aerospace
- Harsh environment
- Standards
- Small lot sizes

Transport / Railway
- Vibration
- Standards, approvals
- Medium lot sizes

Industrial automation
- Harsh environment
- High number of variants
- Small lot sizes

Test- and Measurement
- Individual
- Robust
- Small lot sizes

Medical
- Design
- Reliability
- Small lot sizes

Telecommunication
- Functional
- Price sensitive, low costs
- High lot sizes

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Enclosures & Components
Manufacturing and Services

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Machining

- Stamping, punching
- Punch drawing
- Bending
- Laser cutting
- Welding (Laser welding to come)
- Drilling
- Milling
- Thread cutting

Surface treatments

- Passivation of aluminium
- Chromating of aluminium (non RoHS)
- Anodising of aluminium
- Powder coating
- Galvanizing of sheet metal
  - pre-galvanized sheet metal
  - galvanizing after machining
- Nickel plating

Services

- EMC advisory service
- IP advisory service
- Shock, vibration advisory service
- Thermal simulation
- Testing
- Logistics

Finishing

- Assembling
- Set packing
- Silk screening
- Digital printing

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Enclosures & Components
Core competencies

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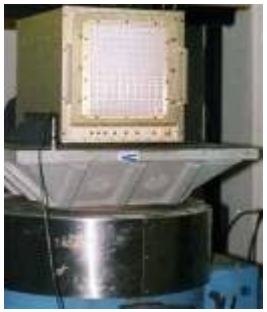
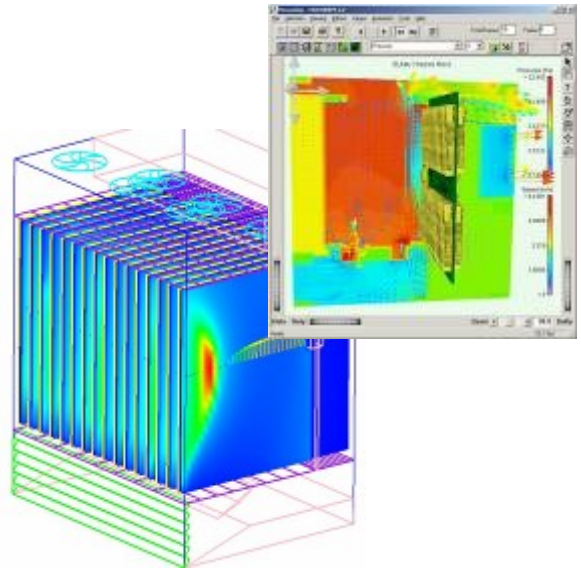
- EMC, ESD
- Vibration
- IP-protection
- Cooling, thermal simulation

Experience in IP protection



Shock- & Vibration-tests in this example on a COTS - System



Modern CFD- Software for thermo-simulation already in the 3D model

An “EMC”-enclosure reduces the emission level and increases the immunity against noise

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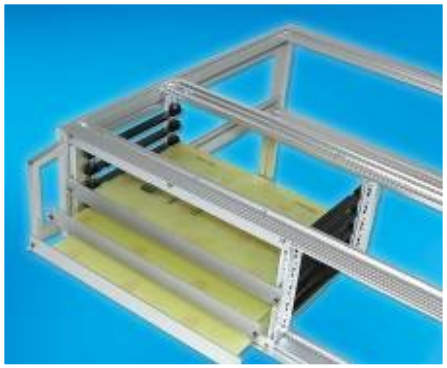
Enclosures & Components

Sub racks, chassis, enclosure components

ELMA 50 years 1960-2010
Your Solution Partner



Characteristics:

- Universal use
- Flexible, scalable
- Functional
- EMC
- Cost effective
- Is mainly used in hidden areas (cabinets)

Applications:

- Processing units
- Telecommunication
- Scientific
- Machine controls

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Enclosures & Components

Instrument cases, desk top enclosures

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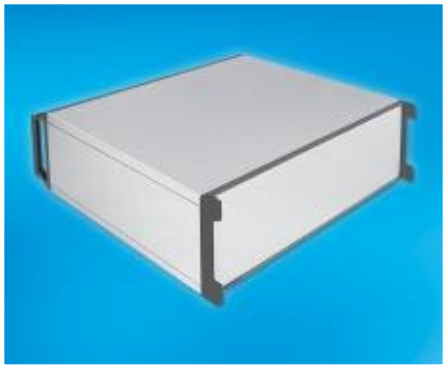

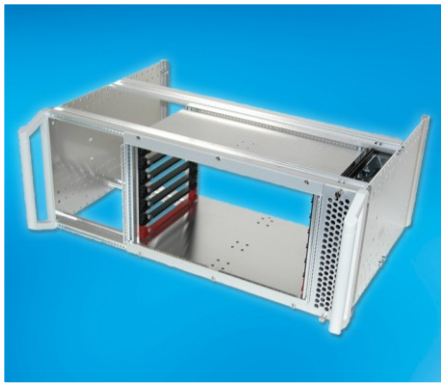

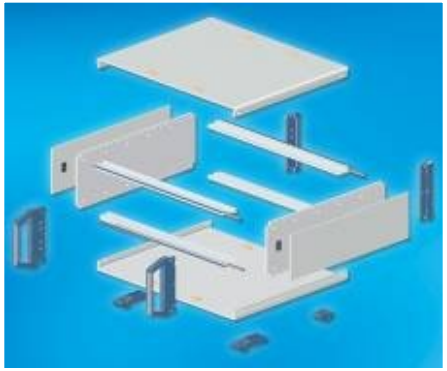

Characteristics:

- Good design
- Individual design capabilities
- Adaptable
- Robust
- Light weight
- EMC save
- Low number of visible screws

Applications:

- Test- and measuring equipment
- Laboratory equipment
- Controls

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Enclosures & Components
Instrument cases, small enclosures

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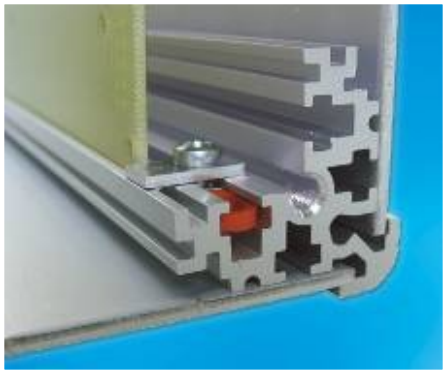
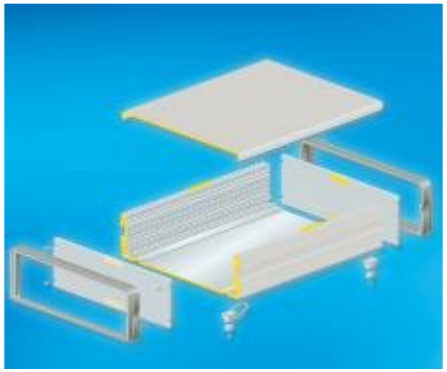


Characteristics:

- Robust
- Good design
- Big accessories assortment
- Individual design capabilities
- EMC / IP protection

Applications:

- Test- and measuring equipment
- Decentralized electronics
- Portable electroni
- IT analysis units



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Enclosures & Components
Front panels, handles and accessories

ELMA 50 years 1960-2010
Your Solution Partner

Characteristics:

- Mechanics according IEC, IEEE, ATCA
- Standard or EMC front panels
- Big accessories assortment
- Anodized (hard) and passivated (conductive) surfaces
- Elma is market leader in IEEE injector-/ejector handles

Source: Elma Group

Applications, customer groups:

- Processing units
- Manufacturers of PCB boards, electronic boards
- Pluggable power supplies
- Electronics, logical cards

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Enclosures & Components

Your „Solution Partner“ for customized solutions

ELMA 50 years 1960-2010
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Standard products

Research and development of standard products

Modified standard products

Modifications on standard products as colours changes, dimensions, hole patterns, extra brackets

Customer specific designs

Customer specific products designed to meet requirements of customer application

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Enclosures & Components
Full Service Provider

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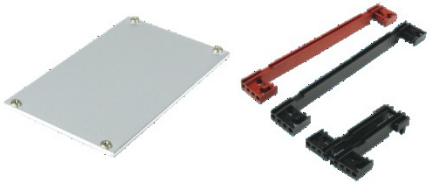
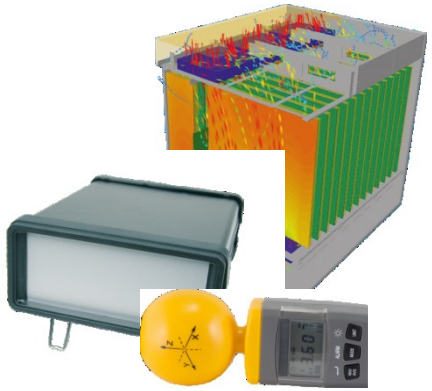
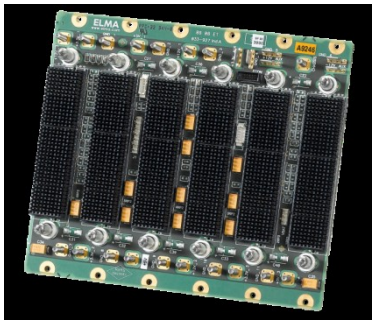
Your Solution Partner

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Enclosures & Components
Reference Stories

ELMA 50 years 1960-2010
Your Solution Partner

ellisys
Better Analysis.

Guardbox 33 for Testing System

- Customer/Application: Ellisys (Switzerland)
  USB protocol testing system
- Remarks: Customised front panel

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Enclosures & Components
Reference Stories

ELMA 50 years 1960-2010
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Bystronic

Spirit-Kit 11 for Machine Tools

- Customer/Application: Bystronic Laser, Switzerland
  Control of Lasercutting Machine
- Remarks: Customised system, incl. front panels, handles, power supplies, ...

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Enclosures & Components
Reference Stories

ELMA 50 years 1960-2010
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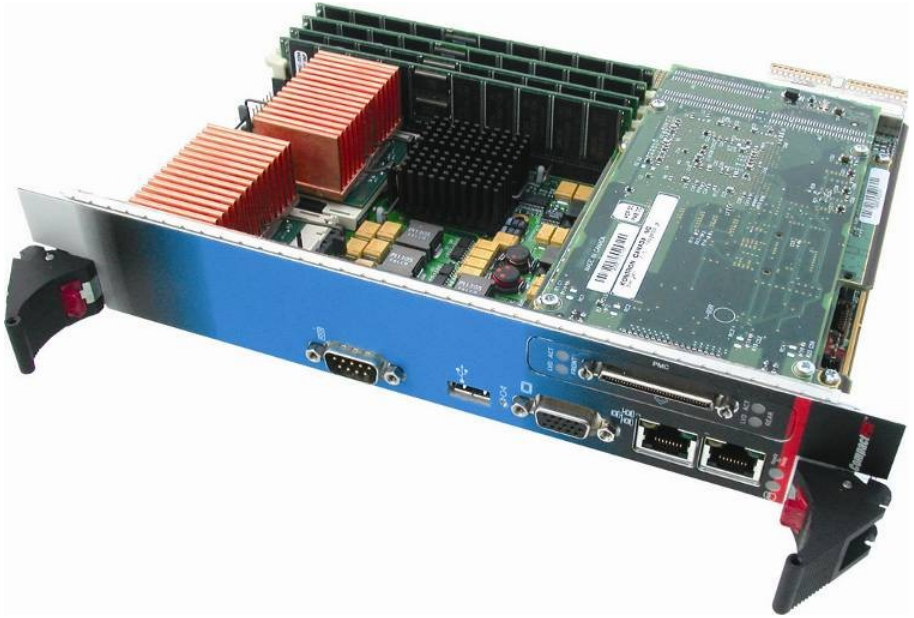
kontron

IEEE-Handles for Telecom

- Customer/Application: Kontron (Germany)
  CompactPCI CPU



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Enclosures & Components
Reference Stories

ELMA 50 years 1960-2010
Your Solution Partner

TELSONIC ULTRASONICS

Stylebox 15 for Industrial Automation

- Customer/Application: Telsonic (Switzerland)
  Ultrasonic welding systems
- Remarks: Customised color, customised dimensions

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Enclosures & Components
Reference Customers

ELMA 50 years 1960-2010
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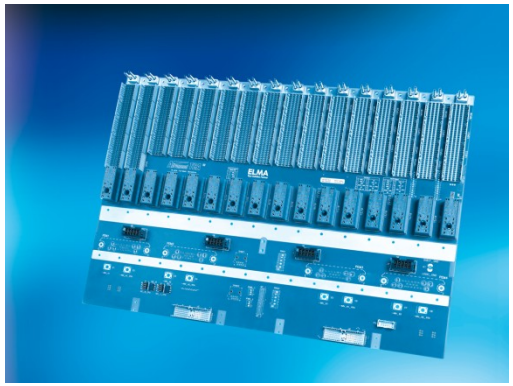
Product Overview
Elma Product Lines

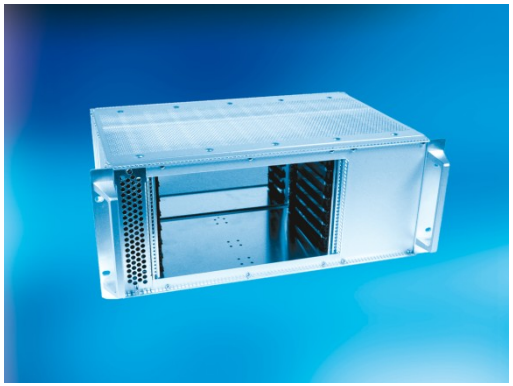
ELMA 50 years 1960-2010
Your Solution Partner

Electronic Packaging

System Platforms



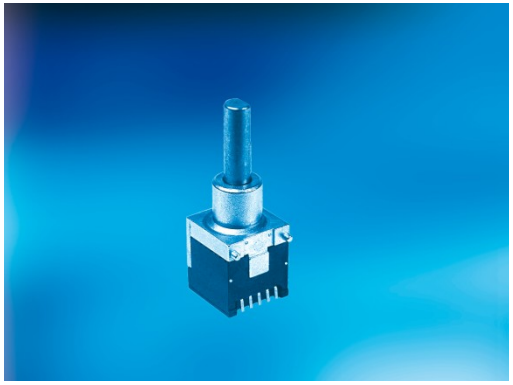
Backplanes



Enclosures & Components

Cabinets

Rotary Switches



Rotary Switches

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Product Overview
Cabinets

ELMA 50 years 1960-2010
Your Solution Partner

- 19” standard cabinets
- Server cabinets
- Server and cabling racks
- Compact cabinets
- Wall-mounted cases (network)
- Power distribution units
- Accessories

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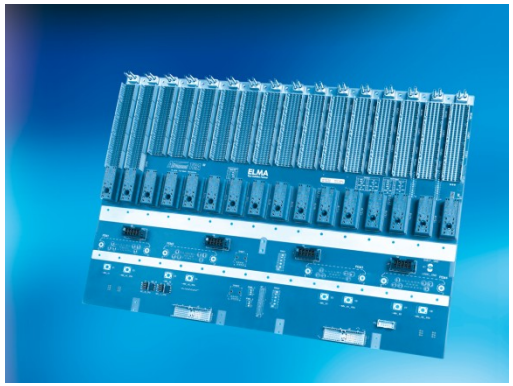
Product Overview
Elma Product Lines

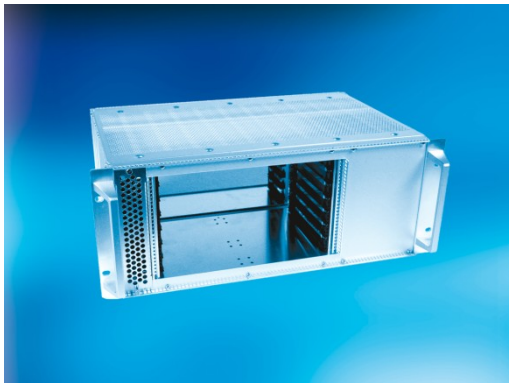
ELMA 50 years 1960-2010
Your Solution Partner

Electronic Packaging

System Platforms



Backplanes



Enclosures & Components

Cabinets

Rotary Switches

Rotary Switches

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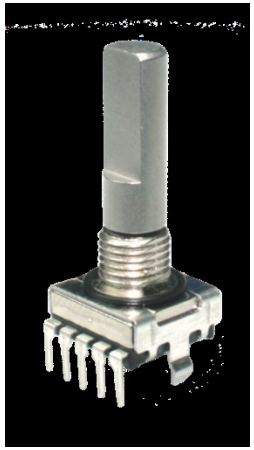
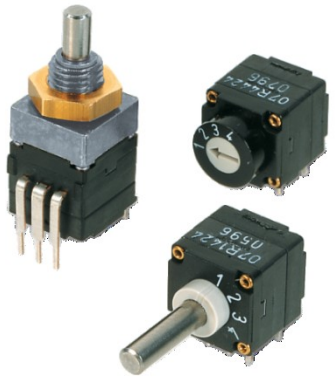
Rotary Switches
Business Model

ELMA 50 years 1960-2010
Your Solution Partner

- Design and manufacture of high quality rotary switches
- Supporting market places from industrial to aerospace, worldwide
- Adaptation of the products to the customer's exact requirements
- Customized shafts, bushings, plating, torque, packaging etc.
- Design-in expertise and first class customer support





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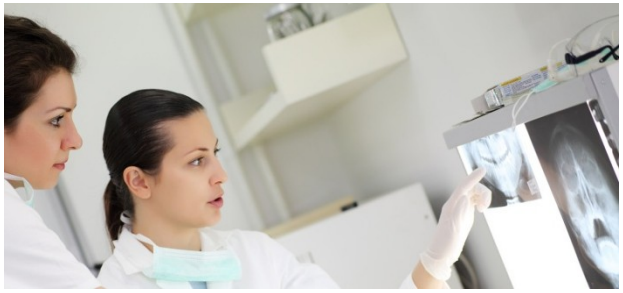
Rotary Switches
Target Markets

ELMA 50 years 1960-2010
Your Solution Partner

- Portable Equipment
  - Heat, cold, splash, humidity
  - Vibration, shock
  - Limited space, high torque
- Medical
  - Splash proof
  - Nice switch feel
- Industrial
  - High variety
  - Cost effective



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Rotary Switches
Target Markets

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Your Solution Partner

- Transportation
  - Splash, shock & vibration
  - Cost effective

- Aviation
  - Space critical
  - Long life, reliability

- Pro Entertainment
  - Superior switch feel
  - Long life

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Rotary Switches
Product Overview

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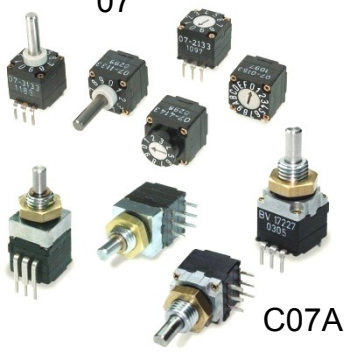
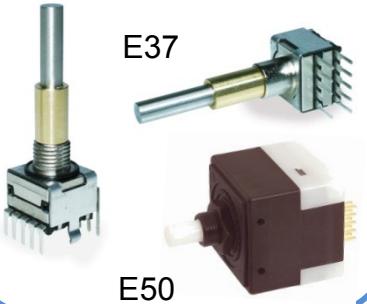
Coded Switches



Concentric

C08

Encoders



Selector Switches

Knobs

Classic Collets

Soft Touch Collets

Push-On

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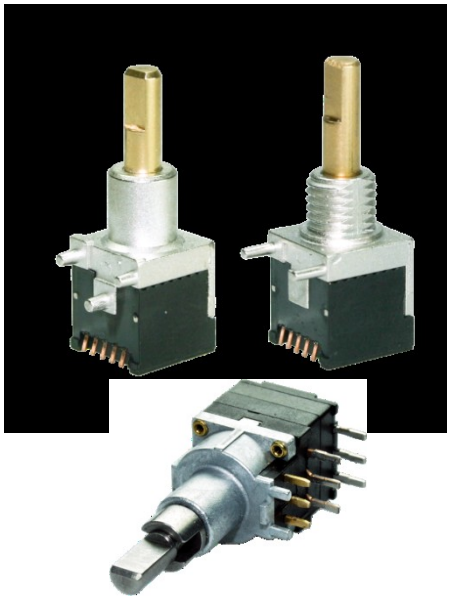
Rotary Switches
Coded Switches

ELMA 50 years 1960-2010
Your Solution Partner

- 2 to 16 positions miniature coded switches
- For rugged environments
- Up to 3.5 Ncm switching torque
- THT or THR/SMT reflow
- Optional IP68 front panel sealing (up to 5 bar)
- Operating temperature range: -40 to +85°C
- Various options and customization



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Rotary Switches
Mechanical and Optical Encoders

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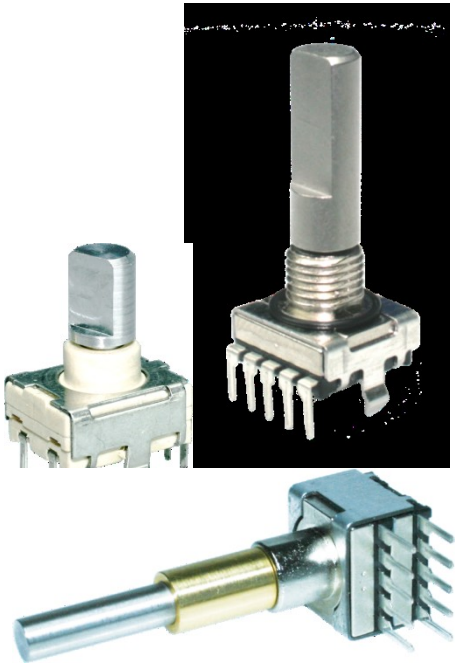
Your Solution Partner

- 16 to 32 detents resolution
- High life expectancy
- Various switching torques from 0.5 to 2.5 Ncm
- Gold plated contacts
- THT or THR/SMT reflow
- Front panel sealing: up to IP68
- Operating temperature range: up to -40 to +85°C
- Various options and customization



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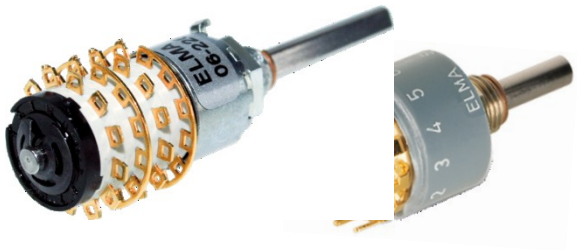
Rotary Switches
Selector Switches

ELMA 50 years 1960-2010
Your Solution Partner

- Very robust designs for rugged environments
- Gold plated contacts: 3 micron
- High switching torques: up to 20 Ncm
- Operating temperature: up to -40 to +85°C
- Front panel sealing: up to IP68
- Various options and customization



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Rotary Switches
Collet and Push-on Knobs

ELMA 50 years 1960-2010
Your Solution Partner

Classic Collet Knobs
- Precise quality knobs
- Secure collet mounting
- Wide variety
- Lots of accessories
- Custom colors on request

Soft Touch Collet Knobs
- Ergonomic „soft touch“ feel
- Secure collet mounting

Push-on Knobs
- „Soft touch” or hard feel
- Cost effective choice

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Rotary Switches
Reference Stories

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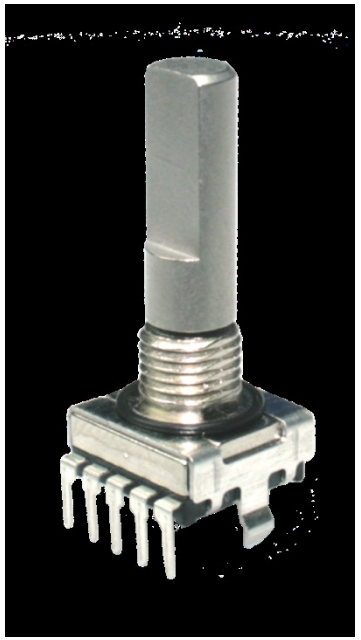
Your Solution Partner

McIntosh

E33 for Pro Amp

- Customer/Application: McIntosh (US)
  Pro amp
- Reason for success: Customized shaft,
  low play customisation



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Rotary Switches
Reference Stories

ELMA 50 years 1960-2010
Your Solution Partner

PHILIPS

E33 for Medical

- Customer/Application: Philips Healthcare (China)
  Patient monitor
- Reason for success: Replacing expensive optical Grayhill

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Rotary Switches
Reference Stories

ELMA 50 years 1960-2010
Your Solution Partner

THALES

C07A for Multi Role Radio

- Customer/Application: Thales (US)
  Multi role radio „Liberty“
- Reason for success: Perfect fit, customization

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Rotary Switches
Reference Stories

ELMA 50 years 1960-2010
Your Solution Partner

NETLINE

Type 01 for Electronic Warfare

- Customer/Application: Netline (Israel)
  Jammer
- Reason for success: Customization; special shaft,
  IP68, robustness

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Rotary Switches
Reference Customers

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THALES

ROHDE&SCHWARZ

BOEING

MOTOROLA

EADS

NASA

HYT

PHILIPS

McIntosh

MEPROLIGHT

Elbit Systems

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Thank you for your attention.

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