



SURFACE-MOUNT LEDs

FRONT PANEL LEDs

LIGHT PIPES

LIGHT TUBES

LIGHT GUIDES

## Indicating & Illuminating Products Overview Brochure

Elma Electronic ● [www.elma.com](http://www.elma.com)

**ELMA**  
Your Solution Partner

# Elma Electronic

## ABOUT ELMA

Founded in 1962, Elma is an industry innovator in the design and manufacture of electronic enclosures and passive electronic components. Elma enjoys a leading position in the VME/VME64x, VXI, VXS, PXI, cPCI, ATCA, MicroTCA and Rugged COTS packaging markets.

Based in Wetzikon, Switzerland and Fremont, California, Elma is a global leader in electronic enclosures and components. The company has facilities and representatives in over 40 countries. Elma has a broad base of customers in diverse industries such as telecommunications, industrial control, medical electronics, military and defense.

Elma strives to provide products superior in quality, reliability, performance, and consistently presents new, innovative designs to the market. Elma's product line encompasses well over 16,000 parts, including enclosures, cabinets, high quality switches, LED arrays, knobs and much more. Elma also offers design and integration services backed by responsive and knowledgeable technical support. Elma's leading quality level is reached through training of all employees and following of systematic procedures per ISO 9001 standards to which Elma has been registered.

## CUSTOM SOLUTIONS

Customization is the standard at Elma Electronic. With an extensive offering of modular products as a foundation, Elma is able to leverage existing solutions and proven design concepts to meet any custom application. This approach ensures that Elma will provide a quality, compliant solution with significantly reduced lead time, cost and risk.

Elma leads the industry in modifying standard ATCA and MicroTCA backplanes and chassis to meet customer's exact needs.

## TECHNICAL CAPABILITIES

- Agency Certification
- Verification Testing
- EMC Testing
- Thermal Testing
- System Integration
- Simulation/Characterization

## WHY CHOOSE ELMA

### Flexibility

Elma tailors solutions to individual applications to ensure fast and cost-effective results.

### Experience

Extensive practical experience in packaging electronic systems is used to minimize the time taken to develop new customized solutions without compromising system performance or reliability.

### Compatibility

Because the two key electromechanical components - enclosures and backplanes - are made in-house, Elma guarantees compatibility, consistency and reliability.

### Global Resources

With manufacturing in Europe, Asia and the USA, customers benefit from local service backed by global resources.

## ELMA PRODUCT DIVISIONS

### Enclosures & Components



### Backplanes



### System Platforms



### Switches, Knobs & LEDs



### Cabinets



# LEDs

## Overview

Elma Electronic offers the highest quality LEDs, light-guides, and light systems. With superior design technology and the finest materials and components, Elma's light systems are highly reliable and long lasting. The Elma LEDs and light-guides are renowned for consistent color, and optimal brightness, light containment, and wavelength quality. Customization is our specialty, even in small volumes.

Our indicating and illumination products are designed for all types of applications including Automotive, Medical, Military/Aerospace, Communications, Transportation, Energy, Industrial, and Commercial markets. Elma offers a wide range of products including LED arrays, light-guides, light tubes, surface-mount LEDs, and other light systems.



## Applications

- Automotive
- Communications
- Energy/Renewable Energy
- Industrial
- Medical Equipment
- Military/Aerospace
- Transportation Systems

## Design Expertise

Elma offers optimal wavelength consistency and quality with the most reliable and long lasting LEDs and light-guides. As light systems are exposed to heat, inferior products can turn yellow over time, affecting the color and light quality. To prevent this, Elma employs heat-resistant materials that prevent light degradation and cracking. Using high grade polycarbonates and modern, extreme high-pressure injection molding techniques, our PC light pipes remain more optically transparent over time than other choices of materials.

Light loss and proper display characteristics are another primary design consideration. Elma properly treats the inside surfaces of our light pipes to control how the light exits the device. This is achieved by creating the proper shape of the diffusing or collimating surface of the light exit point.

Unusual shapes and small sizes are not a problem at Elma. With our optical modeling software and customization expertise, we can provide a custom solution for you. We've developed several creative solutions for unique light shapes, light curtains, and other design styles.

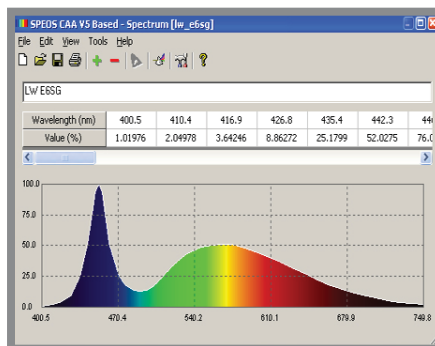
Recognizing the need to simplify the solder process, Elma offers SMD designs. Our SMD LEDs and light-guides save assembly time and money, featuring high-temp versions that can take the extreme heat of standard reflow processes.

Elma controls every facet of optical design to ensure lowest light loss and proper light diffusion.

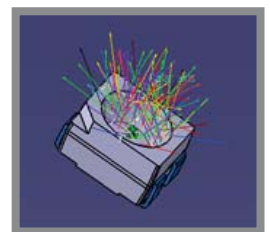
With creative design, solid model validation and complete system testing, you can be assured that Elma's LEDs and light pipes give your product the quality and reliability edge you are looking for.



Reflective surface pattern for light direction

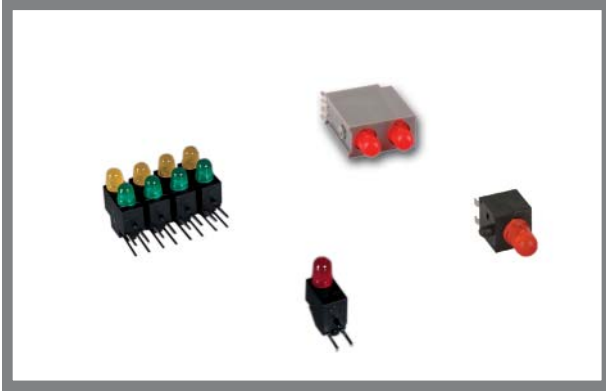


Simulation of light spectrum from a light guide.



Model of photons emitted by an LED

# LEDs



## Front Panel LEDs

- 2mA and 10mA versions, arrays from 1-16
- Pre-Mounted in single or double LED housings
- Array blocks can be separated by hand
- Exact orientation and correct polarity are guaranteed with the location pin
- High luminosity with low power consumption



## Surface-mount LEDs

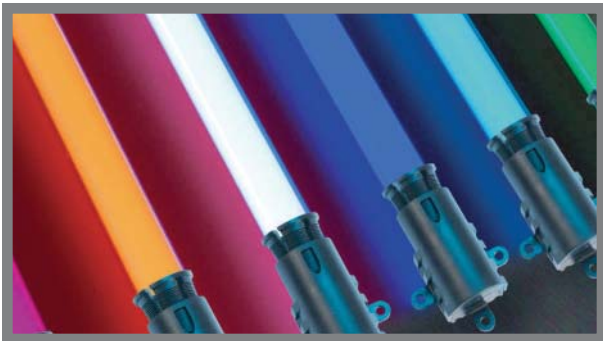
- Very high insertion capability on all standard insertion machines
- Suitable for use on all infra-red and vapor-phase soldering systems
- Avoidance of chip mixes on the printed circuit board
- Optimal luminous efficacy and light distribution on the radiating surface
- High ESD strength, diverse adaptation options in terms of length, width and height
- Other LED types and colors on request
- Spherical or planar radiating surfaces, horizontal or vertical radiating types, with or without caps.

# Light Pipes



## Light Guides

- Lying, multi-light lying, upright, multi-light upright, and flexible versions.
- Flexible styles can be angled.
- Flexible styles can mount to PCB via press-in.
- Various light pipe lengths and diameters
- Lying version can be strip-mounted .
- Colors can be blended or multi-color.
- Single or double line versions.



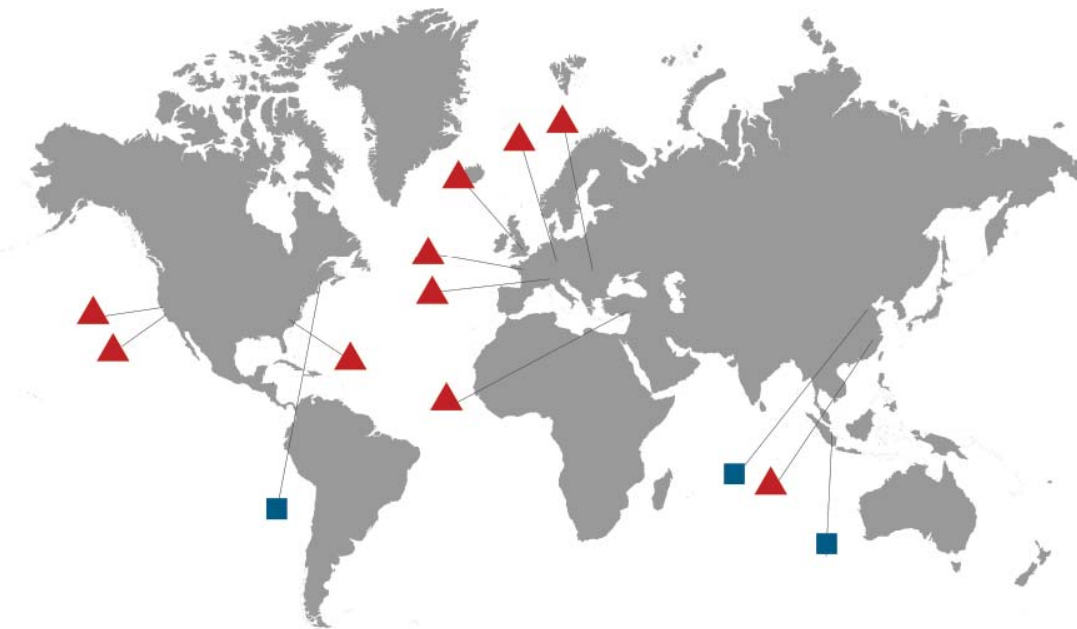
## Light Tubes

- Light tubes in various lengths and diameters.
- Various light direction, brightness, and color options.
- Very good insertion capability on all standard insertion machines
- Suitable for use on all infra-red and vapor-phase soldering systems
- Avoidance of mixed instrumentation
- Optimal luminous efficacy and light
- High ESD strength, diverse adaptation
- High mechanical strength
- Other LED types and colors on request



## Light Systems, Automotive

- Designed for Automotive interior and exterior applications
- Customized solutions based on your requirements
- Optimal light containment, brightness, and outcomes
- For door handles, cupholder, dashboard, key area, lighter area, and more.
- Superior color consistency that won't fade
- High reliability and longevity



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