



# Trusted connections for semiconductor manufacturing

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# Connecting the semiconductor future

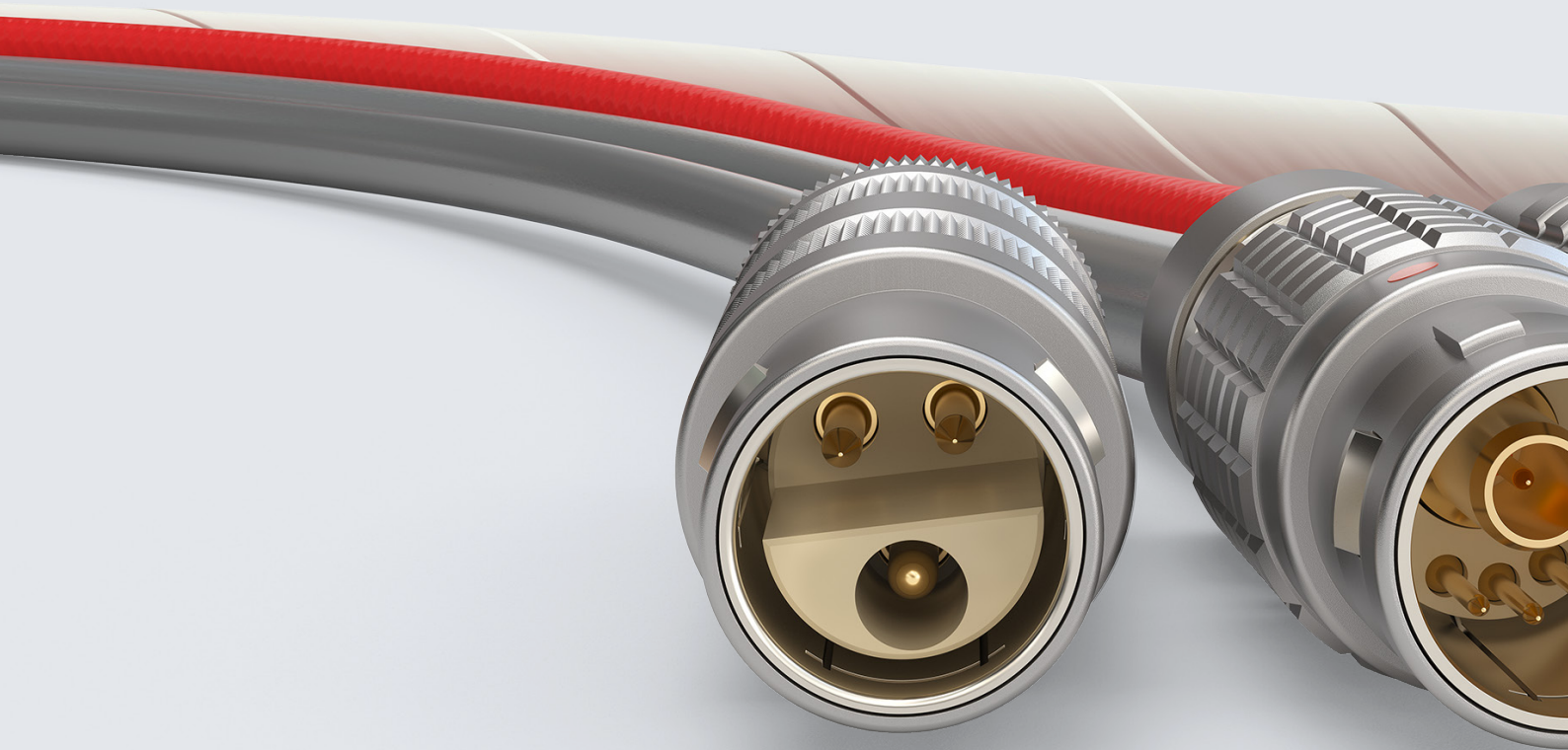
The semiconductor industry is evolving at unprecedented speed. Chips are becoming ever more complex, requiring some of the most advanced equipment and processes to produce smaller nanometer nodes to address the AI and HBM revolution. And to be successful fabs require equipment with interconnect solutions that are precise, high-performing, and uncompromisingly reliable in very challenging environment. Failure is not an option, a single connection failure can halt production, disrupt global supply chains and impact critical technologies.

Beyond manufacturing, this reliability supports the technologies that shape society – from smartphones, computers, and electric vehicles to renewable energy systems and life-saving medical devices. In an industry defined by precision and innovation, dependable connectivity is mission-critical.

**Trusted by leading industry players, LEMO push-pull connectors provide reliable, compact, and high-performance connectivity for semiconductor equipment, ensuring fast, secure connections and expert local support.**

# Trusted by semiconductor equipment leaders

Leading equipment and subsystem providers rely on LEMO connectors for unmatched reliability and performance across the semiconductor manufacturing ecosystem. LEMO's strong expertise and industry presence ensure seamless connectivity, continuous operation, and uncompromised quality.



# Why LEMO

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## Precision & Heritage

- 🔧 Swiss-engineered precision since 1946

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## Flexibility & Innovation

- 🔧 Customizable and modular designs for evolving R&D needs
- 🔧 Rapid prototyping and integration support

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## Continuity & Reliability

- 🔧 Long-term availability for equipment lifecycle continuity
- 🔧 Reliable global supply chain with on-time delivery

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## Global Support

- 🔧 Global support with local service
- 🔧 One-to-one engineering support for complex installations

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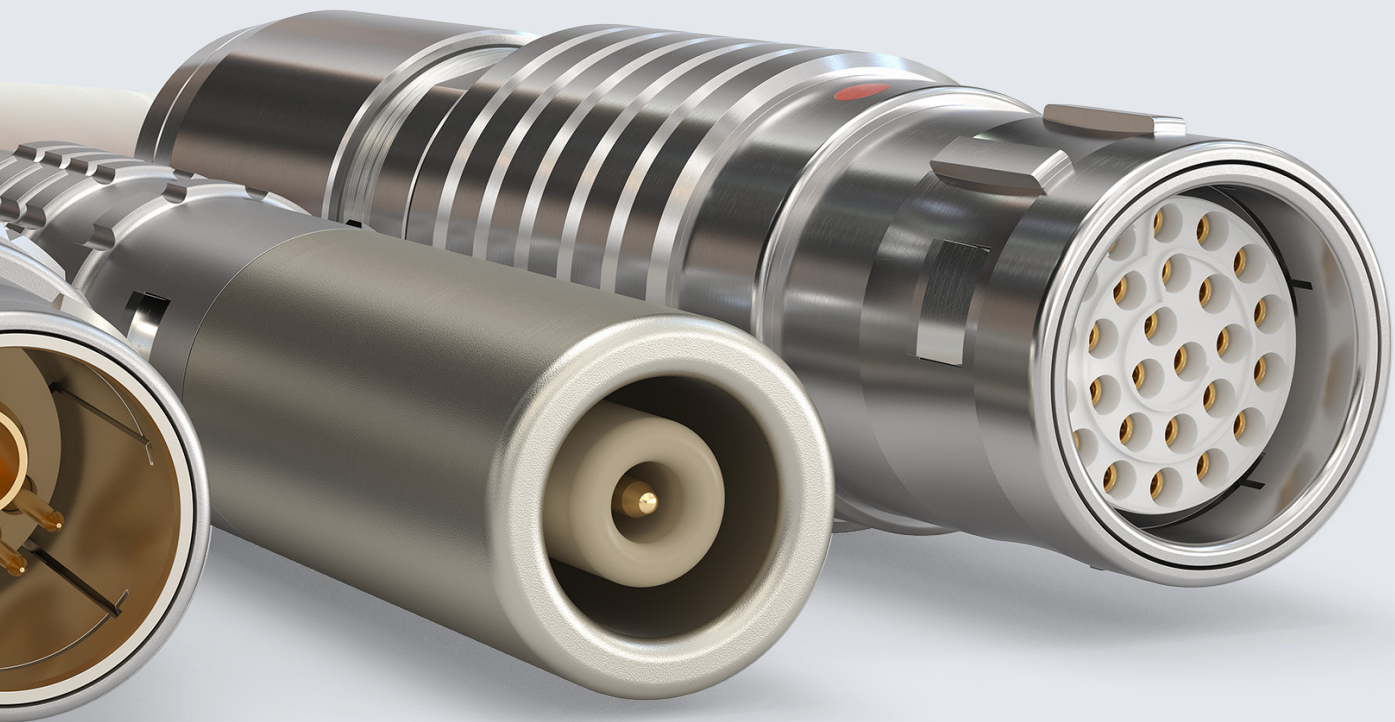
## Manufacturing excellence

- 🔧 State-of-the-art manufacturing ensuring consistency and quality at scale

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## Customer Commitment

- 🔧 Responsive customer service and after-sales support
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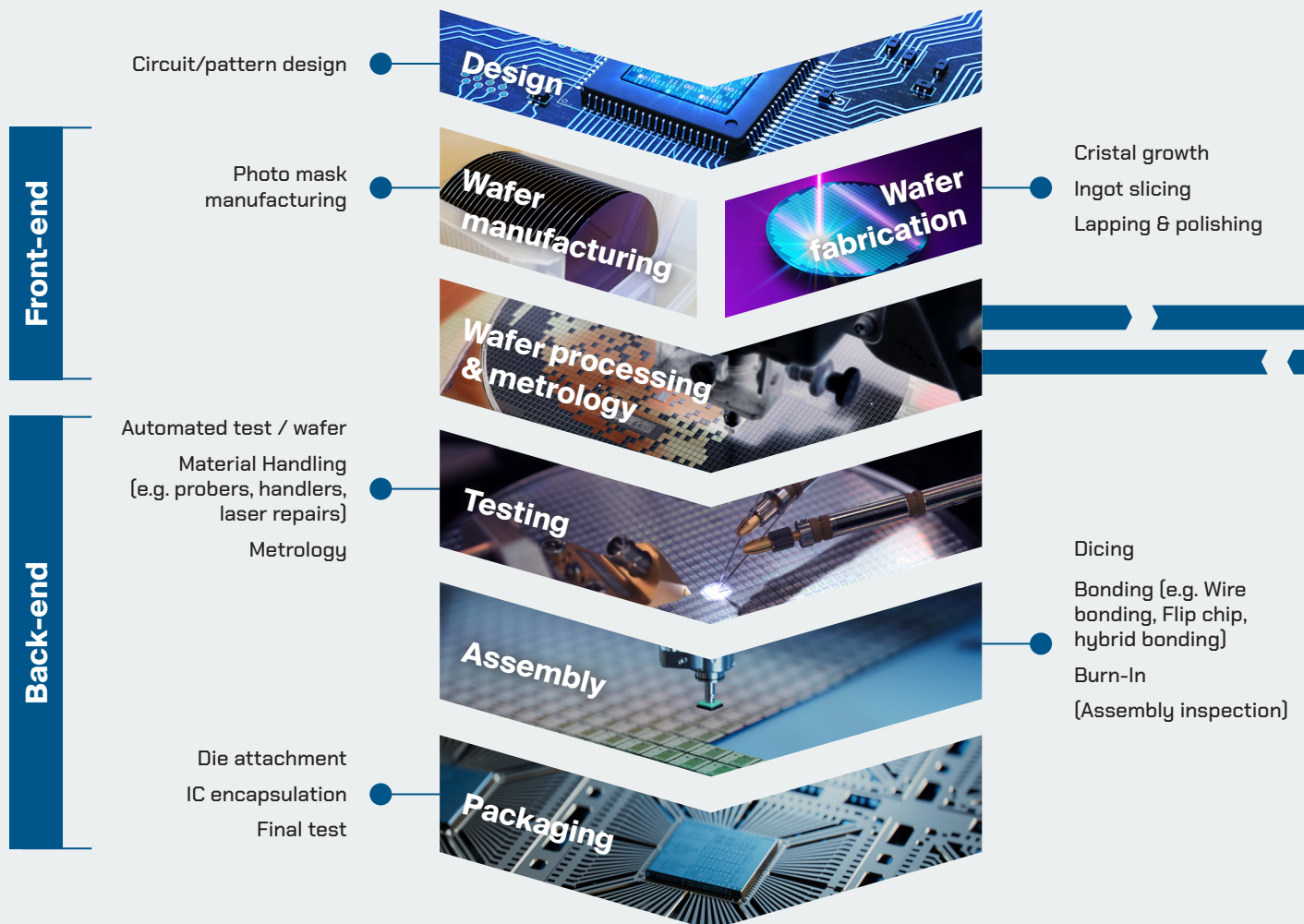


# A highly complex controlled environment

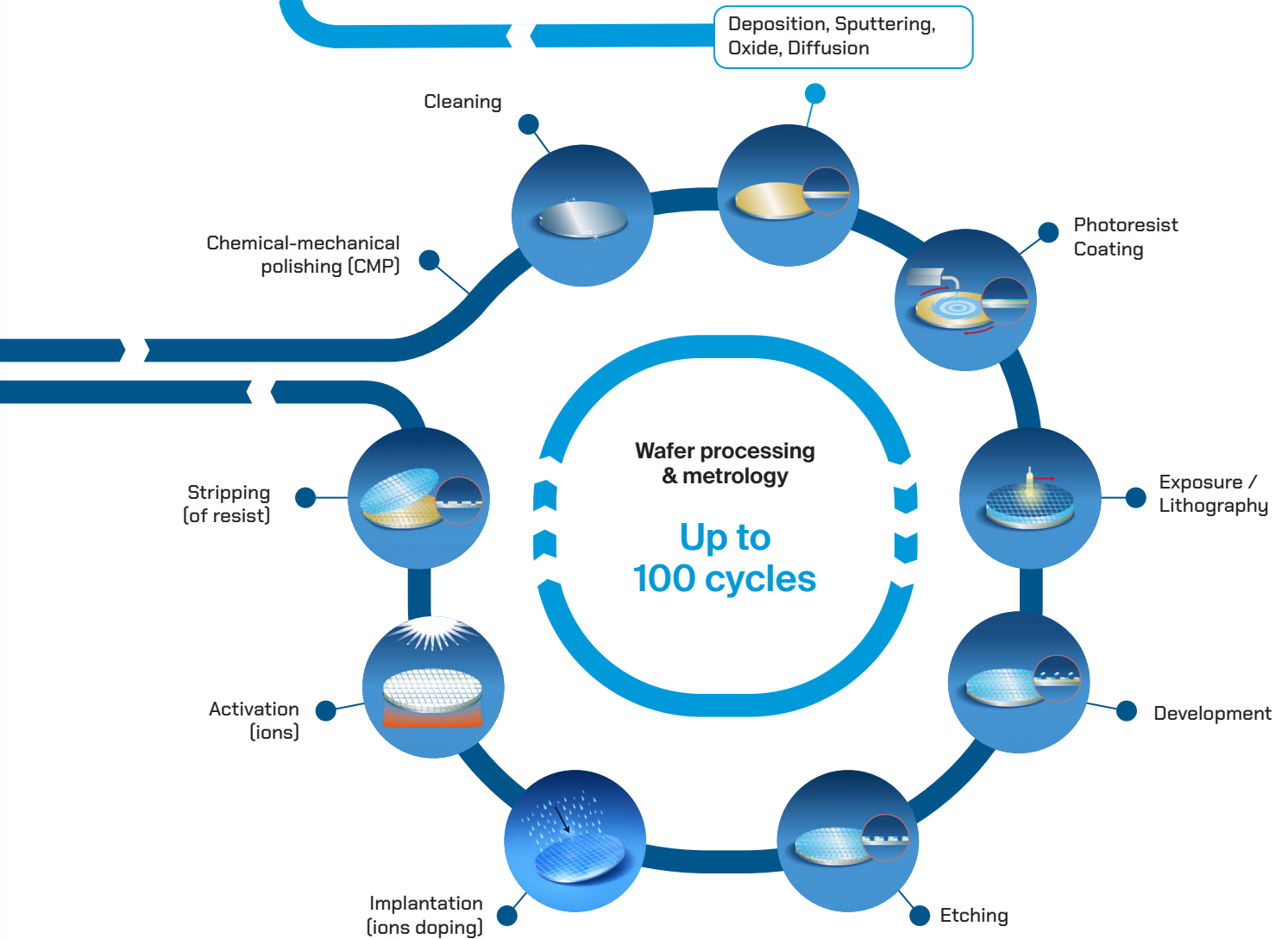
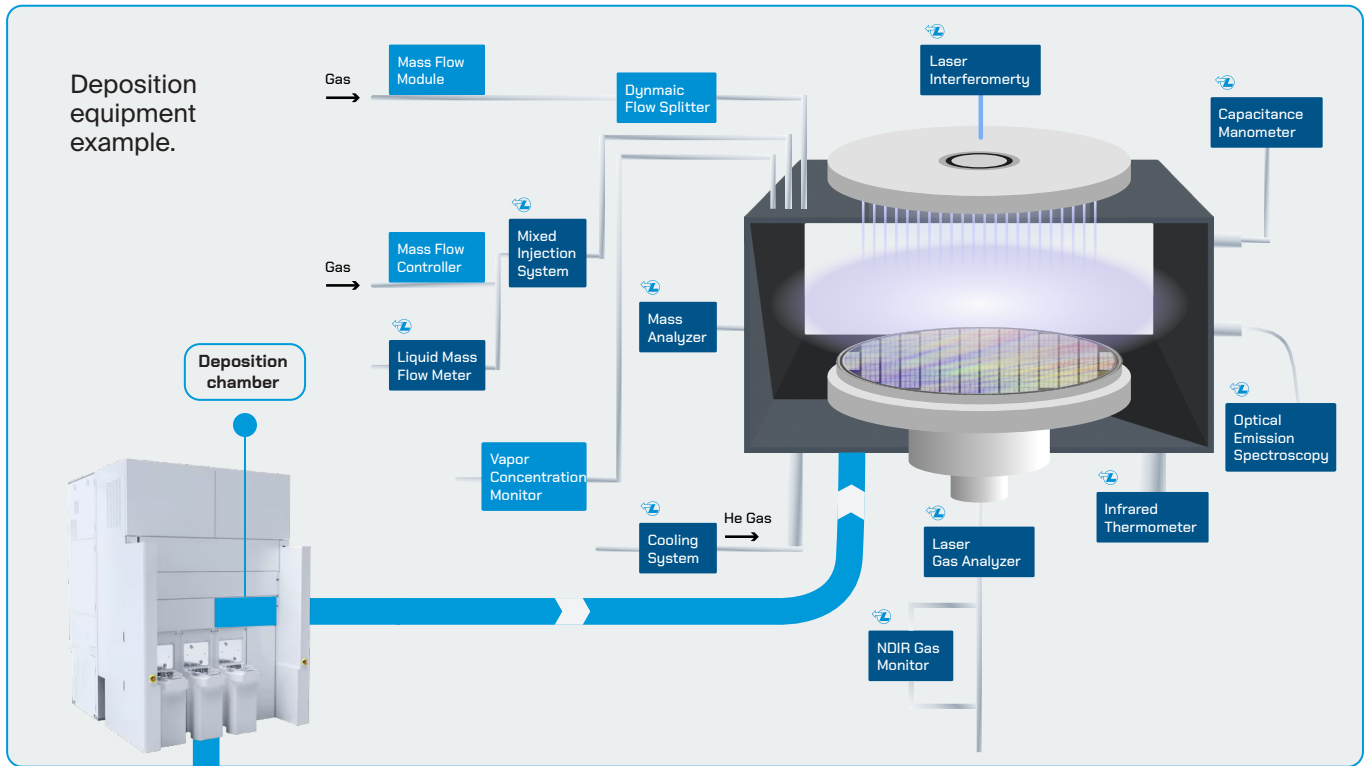
**LEMO connectors play a key role across the complete manufacturing process of semiconductors ensuring performance and uptime for all sensitive processes, like:**

- **Wafer inspection and metrology systems** High-precision connectors for imaging, sensors, and robotic integration.
- **Plasma etchers and deposition tools** Chemically resistant, high voltage connectors for harsh process environments.
- **Lithography systems** High-speed data, lead-free, vacuum compatible connectivity
- **High-speed test equipment** Single-pair Ethernet and high-frequency coaxial connections for fast data acquisition.
- **Automated material handling (AMHS)** Compact, modular connectors to optimize robotic movements and automation cycles.
- **Cleanroom sensor systems** ESD-safe, high-reliability connectors for critical measurement instruments.
- **Power delivery units** Robust, miniature connectors to ensure continuous operation without downtime.

Semiconductors equipment manufacturing phases and processes.  
LEMO provides the invisible vital connectivity solutions in the back-end and front-end.



LEMO present at various sub-system and component level:



# Meeting the challenges of semiconductor equipment

Semiconductor manufacturing depends on highly advanced systems, where large, high-value equipment operates at remarkable speed within tightly controlled environments. Inside each system, numerous complex subsystems interact continuously, where every connection is critical and even the smallest disruption can have serious consequences.

LEMO solutions are engineered to meet these demanding conditions, delivering precision, durability, and reliability across the entire semiconductor manufacturing chain.

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## Minimize downtime & total cost of ownership

- Proven long-term reliability across multiple equipment generations

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## Fast maintenance & upgrades

- Intuitive push-pull locking system, blind mating capability, field-repairable crimp contacts

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## Space constraints in equipment design

- High-density connectors with maximum contacts (up to 114 contacts) in minimal footprint

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## Vacuum & cleanroom integrity

- Airtight, vacuum-compatible designs with helium leak rates down to  $<1 \times 10^{-7}$  mbar.l.s<sup>-1</sup>  
Low-outgassing solutions for critical environments

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## High-voltage performance

- Compact, shielded connectors up to 50kVDC, multi-pole High voltage options

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## High-speed signal transmission

- High-frequency, low-loss data integrity solutions

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## Mechanical endurance

- High mating cycle durability, robust metal housings
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## Chemical & ESD resistance

- Materials resistant to chemicals, temperature variations, electrostatic discharge

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## Critical contamination control

- Lead-Free, low-magnetic material options

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## UHV Feedthrough

- Glass-sealed vacuum feedthroughs with helium leak rates down to  $<1 \times 10^{-9}$  mbar.l.s<sup>-1</sup> solution for cleanroom application via our official partner

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## High-temperature environments

- Connectors up to +250°C, Solution for high temperature insulation

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## Long-term platform continuity

- Stable product references over decades, backward compatibility

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## Custom engineering requirements

- Tailored connector configurations with local design-in support and technical expertise
-

# Solutions for the semiconductor industry



**B**

**Indoor  
keyed**



**S**

**Indoor  
stepped insert**



**K**

**Outdoor  
keyed**



**Y**

**High Voltage  
Unipole**

Description	LEMO original Push-Pull solution for protected environments	LEMO original Push-Pull solution with unmatched mating ergonomics	LEMO original Push-Pull solution for outdoor environments	Single pole high voltage connectors in high grade materials
Locking	Push-Pull	Push-Pull	Push-Pull	Push-Pull
Size	8 sizes from $\varnothing$ 6.4 to $\varnothing$ 35.0 mm [plugs]	8 sizes from $\varnothing$ 6.4 to $\varnothing$ 46.0 mm [plugs]	6 sizes from $\varnothing$ 11.0 to $\varnothing$ 38.0 mm [plugs]	3 sizes from $\varnothing$ 13.0 to 47.0 mm [plugs]
Keying	13 keyway options	1 [stepped inserts]	9 keyway options	No keyway [unipole]
Shell Types	Over 60 shell styles	Over 50 shell styles	Over 28 shell styles	Over 19 shell styles
Shell Material	Brass	Brass	Brass	Brass
Plating	Chrome	Chrome	Chrome	Chrome
Cable Diameter	1.4 to 25 mm	1.3 to 30 mm	1.0 to 23.5 mm	1.2 to 31.3 mm
NB of contact	2 to 64	1 to 106	2 to 64	1
AWG	8 to 32	0 to 32	8 to 32	1.45 to 6.6 mm
Contact types	Multipole / Coax / Fiber Optic / Fluidic / High Voltage / Mixed / Thermocouple	Unipole / Multipole / Coax / Fiber Optic / Fluidic / Mixed / Thermocouple	Multipole / Coax / Fiber Optic / Fluidic / High Voltage / Mixed / Thermocouple	High Voltage
Contact Termination	Solder / Crimp / Print (PCB)	Solder / Crimp / Print (PCB)	Solder / Crimp / Print (PCB)	Solder
Data Protocols	USB 2.0 / USB 3.2 / Eth Cat6a / SPE	–	USB 2.0 / USB 3.2 / Eth Cat6a / SPE	up to 50 kV DC
Sealing Level	IP50 / Hermetic sockets	IP50 / Hermetic sockets	IP68 / Hermetic sockets	IP50
Temperature Range	-55°C to 250°C*	-55°C to 250°C*	-55°C to 200°C*	-55°C to 230°C*
Mating Cycles	> 5000	> 5000	> 5000	> 1000

# Innovation in focus

At the forefront of high-performance interconnect solutions, LEMO continues to push boundaries with advanced technologies designed to meet the demanding and ever evolving requirements of advanced semiconductor manufacturing.



## Lead Free



- ✓ Ahead of regulatory requirements
- ✓ Holistically managed transition
- ✓ Future proof product reliability
- ✓ Zero disruptions for customers



## UHV Feedthrough

LouwersHanique\*

- ✓ Partnership with LouwersHanique
- ✓ Helium leak rate:  $1 \times 10^{-9}$  mbar.l.s-1
- ✓ Ultra-high vacuum performance for sensitive systems
- ✓ Modular design for flexible interface integration
- ✓ Glass sealing Technology



## Vacuum & air-tight compatibility

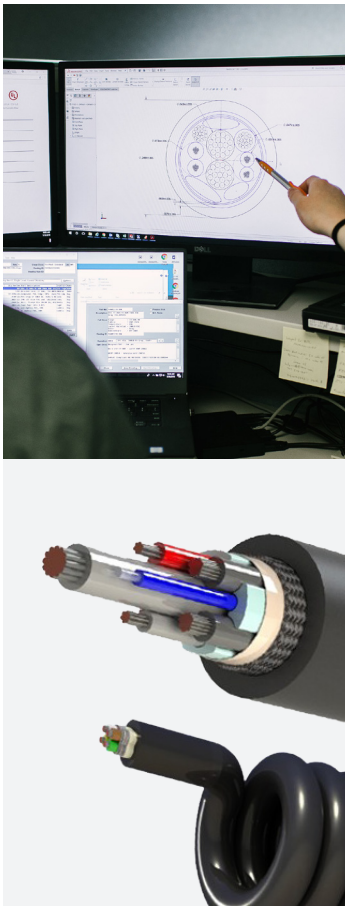
- ✓ Helium leak rate:  $1 \times 10^{-7}$  mbar.l.s-1
- ✓ Rated temperature: -20 to +100°C (size 1B/1S), -20 to +80°C (size 2B/2S)
- ✓ PEEK insulators for durability
- ✓ Selected Low/No degassing materials



## High Voltage

- ✓ Up to 50 kV DC for single pole contact,
- ✓ Multipole High voltage contacts in a single connector
- ✓ Shielded, space-saving design
- ✓ High-voltage cables with UL-compliant options

# From connector to connection



**From connector to cable assembly, LEMO delivers integrated interconnect solutions that combine precision connectors, custom-engineered cables, and fully tested assemblies.**

- **Rugged custom cable solutions:** High-flex, chemical-resistant, EMI-shielded, and abrasion-resistant cables for demanding fab environments
- **Cable assemblies you can trust:** Pre-assembled, plug-and-play solutions for seamless integration
- **Full-service offering:** Custom harnesses, thermoplastic overmolding, private labeling, and certified quality (ISO 9001, IPC-620)
- **Global support:** Engineering assistance and timely delivery worldwide

# How we partner and innovate with you

From early ideation through prototyping, validation, and post-market support, our team works side-by-side with yours – ensuring every connector meets the highest standards of performance, usability, and regulatory readiness.

## With LEMO, you are never working alone.

You gain a committed partner focused on delivering not just a component, but a trusted, patient-centric solution – engineered with precision and delivered with care.



# 1

## Discovery & Requirements

Gain a clear understanding of the device, clinical environment, and application-specific needs.



# 2

## Co-Engineering & Solution Design

Leveraging CAD models, prototypes, and material insights, we partner with you to co-develop a custom or semi-custom connector – engineered to meet your exact specifications.



# 3

## Prototyping & Validation

Accelerate development with rapid prototyping and validation to ensure functional and regulatory compliance.



# 4

## Production & Supply

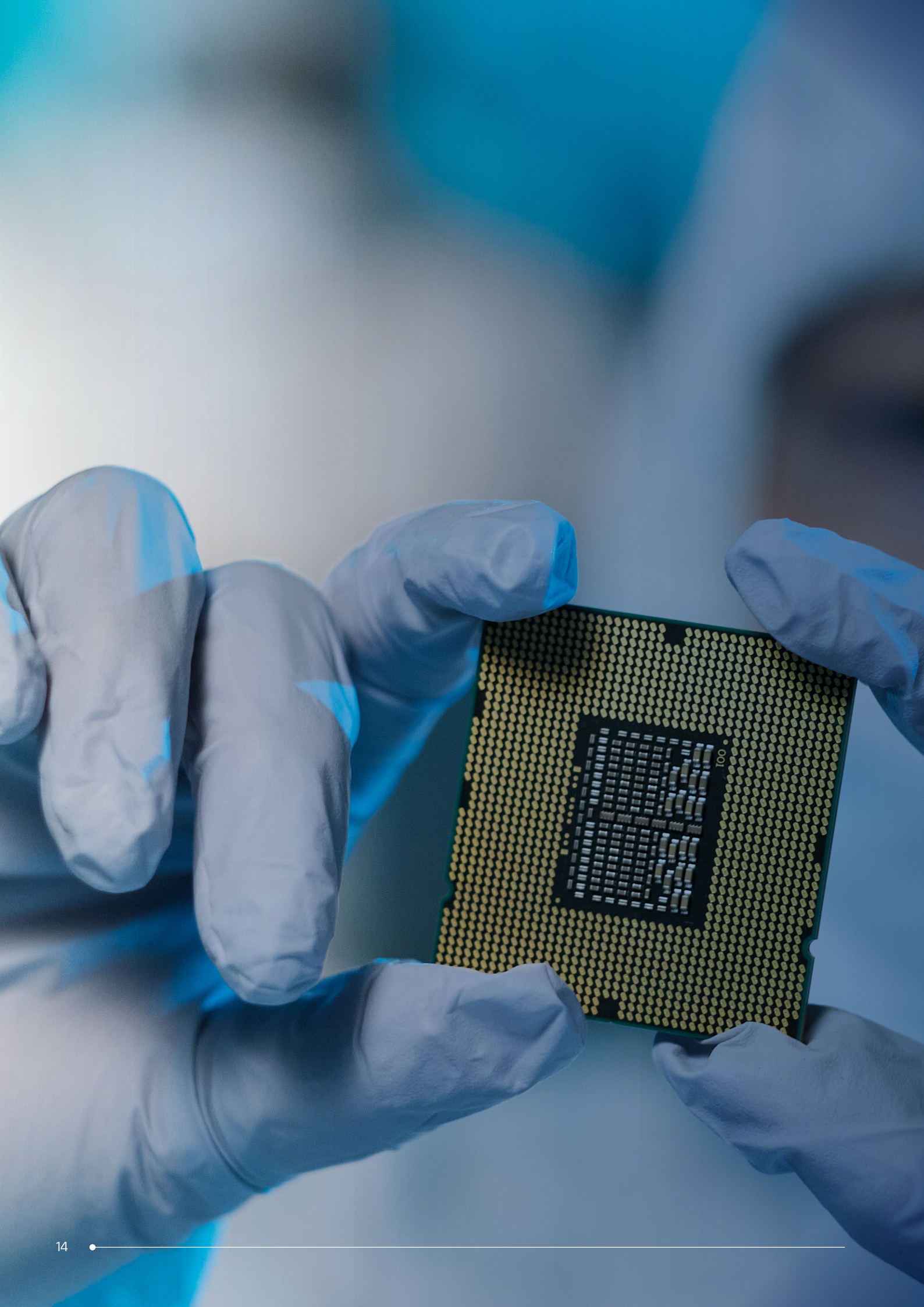
By delivering a finalized production and supply plan, supported by comprehensive quality assurance documentation, we ensure reliable and scalable manufacturing tailored to your production volumes and timelines.



# 5

## Ongoing Support & Lifecycle Management

As your long-term partner, we provide comprehensive post-market support from revision management and detailed documentation to obsolescence strategies, product redesigns, and future innovations committing to deliver global, end-to-end service and support.



# Genuine quality, unmatched reliability

## Protecting our legacy, defending your trust

LEMO's cutting-edge technologies are a global standard in the industry, attracting imitations and counterfeits. While look-alike products may appear similar, they fall short of the precision, durability, and performance of genuine LEMO connectors.

## Protecting innovation and integrity

Our connectors are protected by patents, providing legal safeguards against counterfeit and unauthorized versions. Using non-genuine connectors, or mixing them with competitors' products, compromises the safety, performance, and compliance of your systems. LEMO cannot be held liable for any issues arising from the use of unauthorised, modified, or counterfeit components.

Choose **LEMO** for  
**precision, innovation,**  
and **solutions** that meet  
the highest **semiconductor**  
industry **standards.**

# Empowering connectivity

## About LEMO

With a strong legacy of excellence and innovation, the LEMO Group is a global leader in providing high performance custom interconnect solutions. From the depth of the oceans to the far reaches of outer space, no matter how harsh the environment may be, our connectors and cable solutions are chosen, wherever connections are too critical, precious, or vital to fail. Offering over 90,000 product combinations that continue to grow through custom specific designs, our subsidiaries and distributors have

built a global network of strong, dedicated local resources with unmatched technical expertise and understanding of customer requirements. Thanks to our global network, we serve more than 150,000 customers in over 80 countries worldwide. All our staff of 2,000 people are united to accomplish the same mission: to guarantee to our customers interconnect solutions that exceed their expectations by designing and delivering products that combine innovation, reliability, and exceptional service.

Years of experience	+80
Employees	+2000
Custom solutions	+90000
Subsidiaries	+20
Distributors	+20
Customers worldwide	+150000
Countries	+80

## LEMO, your ideal partner

One-on-One local engineering expertise and technical support for system integration

Strong supply chain and global distribution network

Custom interconnect solutions for specific project requirements including rapid prototyping

Certified interconnect solutions in compliance with industry standards

Vertical integration ensuring reliable, high-quality interconnect solutions and sustained availability



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Subsidiaries  
& distributors



Product finder



lemo.com

