

# HIGH-SPEED DATA TRANSFER

## Single Pair Ethernet Solutions



Single Pair Ethernet up to 1 Gb/s

Guaranteed Signal Integrity

Compact & Robust Push-Pull



### Unique & comprehensive portfolio for High-speed Ethernet

Over the years Ethernet has continually progressed in speed, security and quality to meet evolving network requirements; it has become the universal wired connectivity of choice across most industries, including IT, telecommunication, transportation and defense.

The emergence of the Single Pair Ethernet (SPE) is now driving adoption of the Ethernet in the automotive industry as well as in industrial automation.

LEMO has been following this evolution and released solutions over time complying with the various Ethernet protocols as they emerged. It therefore has one of the most comprehensive portfolios of connectors for High-speed Ethernet up to 10 Gb/s, and recently included solutions for SPE.

These products were specifically designed to work in demanding environments (e.g. extreme temperature, high humidity, vibration) for a broad spectrum of applications.

ORIGINAL  
PUSH-PULL  
YOUR CONFIGURABLE SOLUTIONS



Product safety notice & disclaimers:

Please read and follow all instructions specified on <https://www.lemo.com/en/about-lemo/product-safety-notice-and-disclaimers>

## LEMO's Ethernet portfolio

LEMO offers a broad range of connectors complying with different Ethernet protocols such as 1000 Base-T4 and 10G Base-T4. LEMO is completing its Ethernet compliant portfolio with a new range of compact and robust Single Pair Ethernet (SPE) connectors providing data transfer speed up to 1 Gb/s and available in its reliable field proven B, K and T Series.

Ethernet protocol	Product series & sizes	Insert configuration	Number of high speed pairs	Max. speed Gb/s	Cable CAT
1000 Base-T4	 B, K, T Series (Push-Pull) Sizes 1	 1* .308	4	1	CAT 5e
1000 Base-T4	 M Serie (Ratchet Coupling) Size 2	 2M.514	4	1	CAT 6
10G Base-T4	 B, K, T Series (Push-Pull) Size 2	 2* .514	4	10	CAT 6a
<b>New</b> 1000 Base-T1 (SPE)	 B, T Series (Push-Pull) Size 0	 0* .511	1	1	SPE
<b>New</b> 1000 Base-T1 (SPE)	 B, T Series (Push-Pull) Size 1	 1* .512	2	1	SPE

### State-of-the-art SPE insert configurations

2 SPE insert configurations were developed, both composed of 0.5 mm contacts for AWG 26<sup>1)</sup> - 30 wires:

- 1 High-speed SPE pair only
- 2 High-speed SPE pairs shielded from each other by 3 ground contacts



**Note:** <sup>1)</sup> AWG 26, please check wire construction wire section should be less than 0.14 mm<sup>2</sup>

### Key features of LEMO's SPE solutions

The SPE configurations are ensuring high quality and reliable High-speed interconnect solutions for both indoor and outdoor environments where absolute signal integrity is needed, with the following key features:

	B Series	K Series	T Series
<b>Ingress protection</b>	IP50	IP66 to IP68	IP66 to IP68
<b>Temperature range</b>	-55 to 250°C	-55 to 200°C	-55 to 200°C
<b>Mating cycles</b>	> 5000	> 5000	> 3000
<b>Alignment Key</b>	12 different keyways	8 different keyways	5 different keyways
<b>Form attribute</b>	miniature	robust	miniature

## Main customer benefits of LEMO's SPE solutions

### Proprietary interface<sup>1</sup>

to carry sensitive information in total security in harsh environments

Guaranteed **signal integrity** and compliance to **IEEE 802.3bp (SPE) protocol** enabling to transmit data up to **1 Gb/s**

**360°** screening for full EMC shielding



**Up to 5000 mating cycles** guaranteed providing longer service life & optimized cost of ownership

**Push-Pull** latching system enabling simple/quick yet safe and reliable frequent connect and disconnect

**Broad range of robust and miniature models**, including IP68 mated providing **lasting compact integrations**

<sup>1</sup> These LEMO specific connectors can transmit data using the SPE protocol, but they are not Ethernet-standard connectors. Their proprietary interface is compliant with the Ethernet specifications and can be used for 1 Gb/s applications.

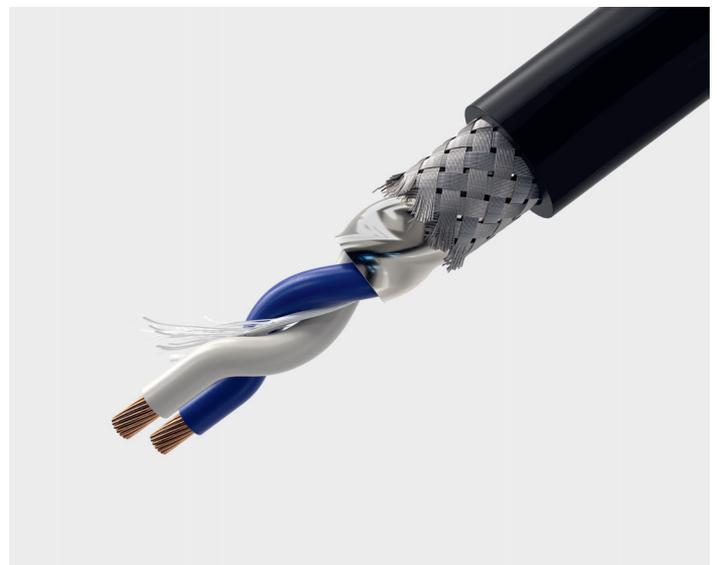
## Single Pair Ethernet (SPE)

Single Pair Ethernet (SPE) enables transmission of data via Ethernet at speeds of up to 1 Gb/s with just one pair of wires instead of 4.

One single pair brings numerous advantages:

- Bi-directional data transfer
- Simpler, smaller and lighter installation via only one pair of wires
- Lower acquisition costs for new installations
- More bending cycles and tighter bending radius possible for cabling

LEMO released SPE proprietary connectors in 2019 with 1 and 2 SPE pairs. These miniature connectors are used, for example, in Automotive Testing to repeatedly connect and disconnect sensors, actuators, radar and cameras to the vehicle's main control systems.



## High-speed interconnect solutions

Selecting a SPE connector does not automatically guarantee compliance to this protocol and the related data transfer speed for the complete Interconnect solution. In fact, the cable has to at least comply to the same protocol, respect the maximum length given in the protocol and be carefully assembled to the connector; the solution has then to be fully tested.

LEMO's experts are ready to assist you for Interconnect solutions, please feel free to reach out.

## Applications



Automotive



Communication



Defense



Industrial & Robotics



Test & Measurement

## About LEMO

LEMO is the industry pioneer in the design and manufacture of high-quality and high-performance interconnect solutions. LEMO's Push-Pull and ratchet coupling connectors are found in a variety of challenging application environments including medical, industrial & machines, automotive, test & measurement, defense, audio-video and telecommunications.

LEMO has been designing precision connectors for more than 75 years. Offering over 90,000 combinations of product that continue to grow through custom specific designs, LEMO and its brand REDEL, NORTHWIRE and COELVER currently serve more than 150,000 customers in over 80 countries around the world.



## Cable assembly

LEMO is renowned for the quality of its connectors and this is matched by the cable assemblies supplied.

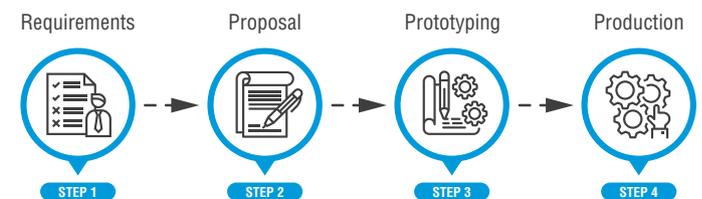
Commitment to quality is supported by 100% testing of all assemblies. Capabilities include potting and overmolding to support rapid prototype and development through to high volume series production. LEMO subsidiaries are equipped with modern equipment, much of it custom built specifically for customer needs. These include cut and strip machinery, robotic assembly and automatic test equipment to ensure maximum reliability and confidence in LEMO cable assemblies.

## Custom solutions

Contacts, connectors and integrated cable assembly solutions meet the most demanding technical market requirements. LEMO's connector solutions and value-added services are characterized by their exclusive focus on meeting the customer's needs.

- Precise implementation of application-specific requirements regarding design, functionality, cost and exclusivity
- Custom connector solutions derived from standard products
- One-to-one local expertise
- Quick prototyping and production turn around

### Custom interconnect solutions based on your requirements



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