

# LEMO Cable assemblies & connectivity solutions





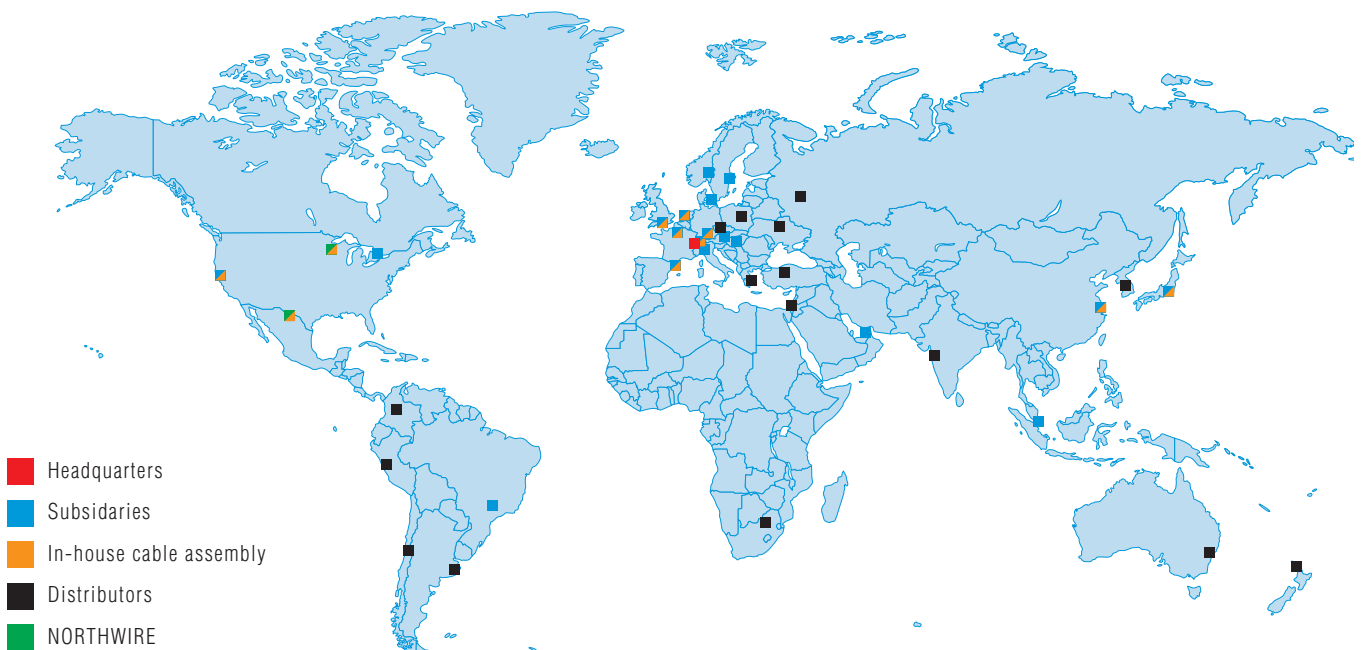
## ABOUT LEMO

LEMO is the acknowledged leader in the design and manufacture of precision custom connection and cable solutions.

LEMO's high quality Push-Pull connectors are found in a variety of challenging application environments including medical, industrial control, test & measurement, Mil-Aero, unmanned vehicles, oil & gas, audio-video and telecommunications.

LEMO has been designing precision connectors for seven decades, offering more than 75,000 combinations of product that continue to grow through custom specific designs. LEMO and its affiliated sister companies REDEL, NORTHWIRE and COELVER currently serve more than 100,000 customers in over 80 countries around the world.

- More than 75 years of Push Pull connector experience
- Over 1800 employees worldwide
- 20 sales offices
- 17 distributors
- 7 production and logistics sites
- 10 LEMO cable assembly facilities
- Technologies Include: design and development, machine tool and special machine construction, injection, stamping, turning, surface technology, assembly and cable assembly



## QUALITY MANAGEMENT SYSTEMS OR CABLE ASSEMBLY STANDARDS

- ISO 9001:2015
- ISO 13485:2016
- IPC/WHMA-A-620 compliant

## WHY PARTNER WITH LEMO?

- Global and local service provided by qualified engineers
- Local stock management
- Fast prototyping & quoting
- NORTHWIRE cable (LEMO brand)
- Full in-house capabilities
- Certified cable assembly teams (IPC/WHMA-A-620)
- Assembly of other connector brands also possible
- Committed long term partner
- Sustainable and excellent production at ONE company
- Proven track record with over 75 years of experience

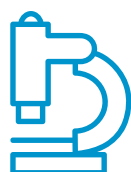
## MARKETS



Medical



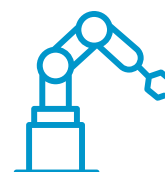
Test & measurement



Research



Broadcast



Machines & Robotics



Oil & Gas



Defense



Aerospace



Industrial control



Nuclear



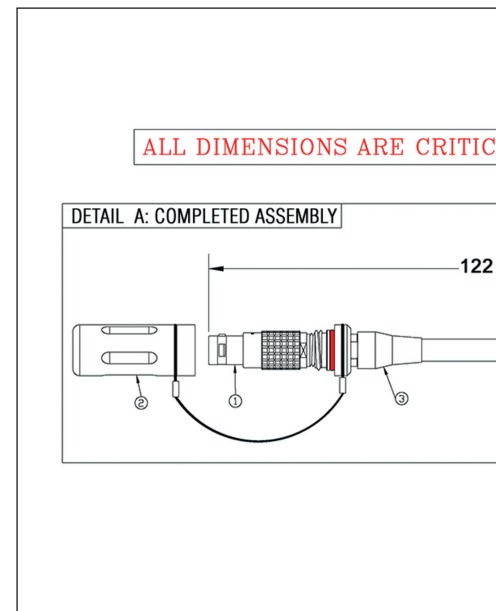
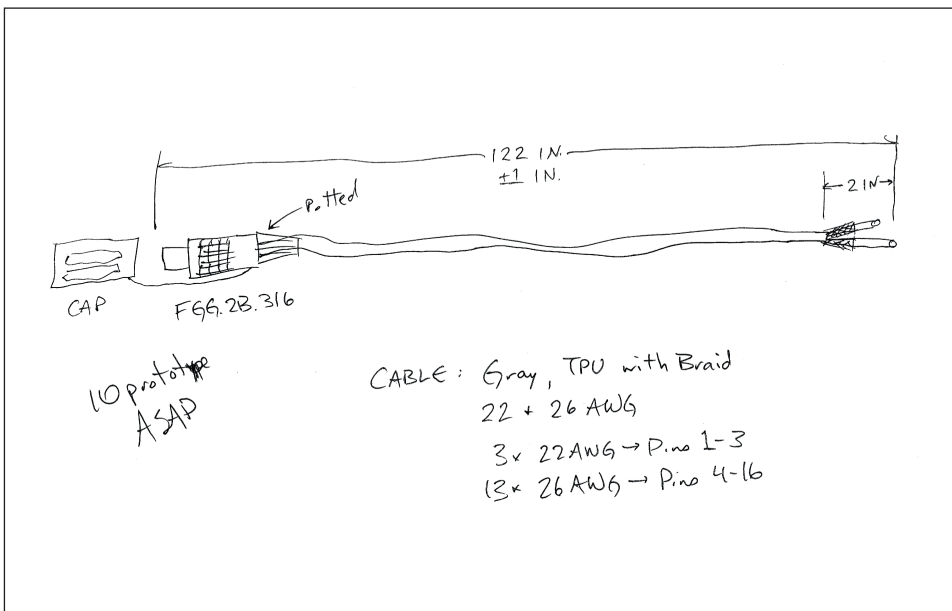
Motorsport

“Over 30 years of custom harness experience.”

## ALL IN HOUSE CONNECTORS, CABLES AND CABLE ASSEMBLIES

The cable assembly depends essentially on the application. Will the connector and its associated cable be manipulated over and over again by an operator? Does the assembly need to be watertight, does it need to meet a specific military standard, must the cable be flexible and will it encounter constant motion such as on a pick and place machine?

LEMO's skilled technicians will consider all these questions, they will build and test assemblies to the customer's specifications. Customers can receive the same high quality cable assemblies that they expect from LEMO connectors. LEMO cable assemblies feature: electronic, fibre optic, and hybrid connections, 100% testing of all assemblies, connector potting, small to large volume capacity and overmold capabilities. Some of the larger subsidiaries are equipped with highly modern and specially designed equipment such as stripping equipment with rotating knives, welding, clipping robot, hydraulic crimp facility, test equipment, etc.



### REQUIREMENTS



STEP 1

### PROPOSAL



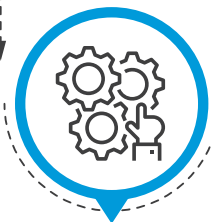
STEP 2

### PROTOTYPING



STEP 3

### PRODUCTION



STEP 4

### OFFER PROCESS

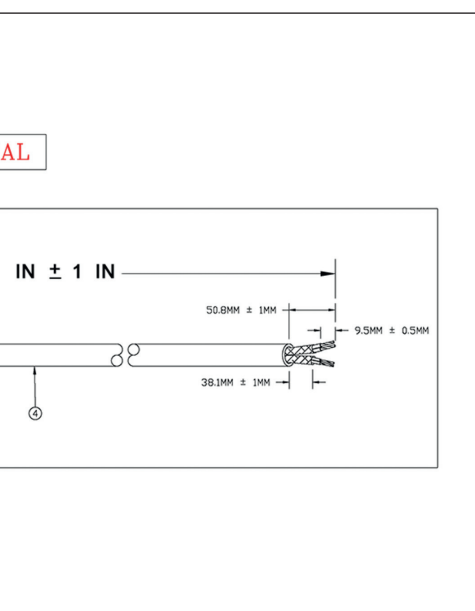
The worldwide presence of LEMO sales network allows you to reach one of our experts near to your location. We will be able to guide you through the best choice for a complete solution.

Our knowledge of various applications and our intensive product and service portfolio will enable us to send offers within 24 to 48 hours upon request.

Each offer will be accompanied with a detailed technical description and drawings.

## LEMO OFFERS SOLUTIONS FOR THE FOLLOWING TYPES OF CONNECTIONS

- Multi Conductors (solder/crimp)
- Fiber Optics
- Coaxial / Triaxial
- NIM-CAMAC
- Fluidic / Pneumatic
- High / Low voltage
- Thermocouple
- Environmentally Sealed
- Mixed / Hybrid



## PROTOTYPING

LEMO also offers prototyping solutions, these prototypes can be for instance a new connector design, a new cable assembly, or a new cable design. For new cable designs a minimum order quantity is normally required, as manufacturing machine setup times can be extensive.

The prototypes will allow our customers to manipulate the new assembly, to see the look and feel, to validate if the hardness or the flexibility of the cable is as expected.

LEMO recently setup a new workshop located in Switzerland dedicated to prototyping new connectors. In addition we also have the possibility to design and print 3D plastic parts in-house. Other specific 3D prints (soft rubber, speciality plastics or metal) can be outsourced to our partners.

## OVERMOLDING

Assembly techniques may involve hot melt technology (low pressure) or overmolding that can be done in various materials ( biocompatic overmolding, TPU, TPE, ...). LEMO will design the mold based on customer drawings, fine tune the shape of the overmold that can be made of either aluminium or stainless steel (for larger volume). LEMO has the capacity to manufacture the mold sets in-house or outsource depending on projects. The mold designs are specifically adapted to the cable size and the cable surface hardness. LEMO can also provide electronic encapsulation of printed boards.

Overmolding can be done for the production of prototypes and low volume production parts - right from the first design stage through to production.



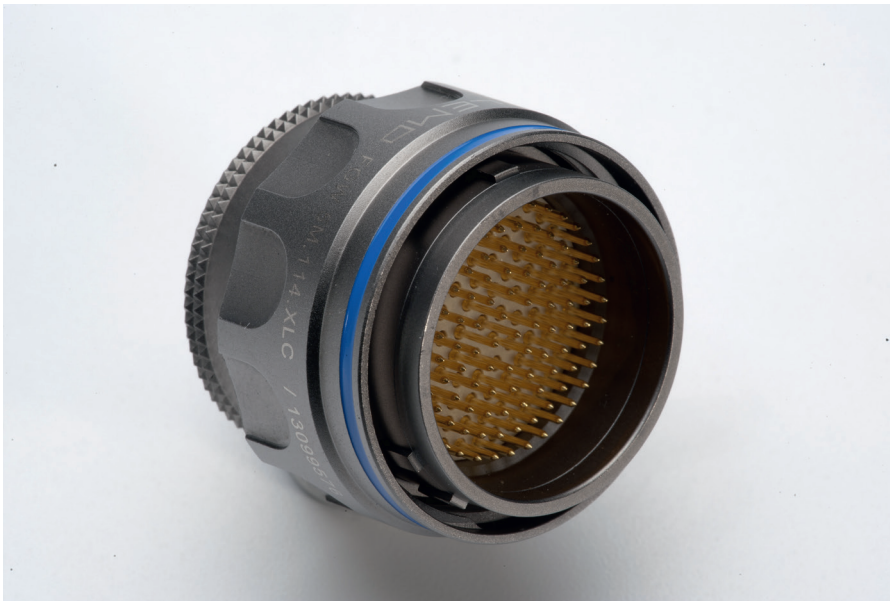
## AUTOMATIC STRIPPING MACHINE

Our facilities are equipped with automatic stripping machines that allow us to process coaxial cables, multi conductor cables, flat cables and others for a wide range of cable AWG. The cycle time is very short and allows cable stripping in less than a second.

In addition, cable lengths can be precisely measured and supplied on wooden or plastic reels in various dimensions. Wooden reels are usually for longer cable distances and can be reused many times.

## LASER ENGRAVING

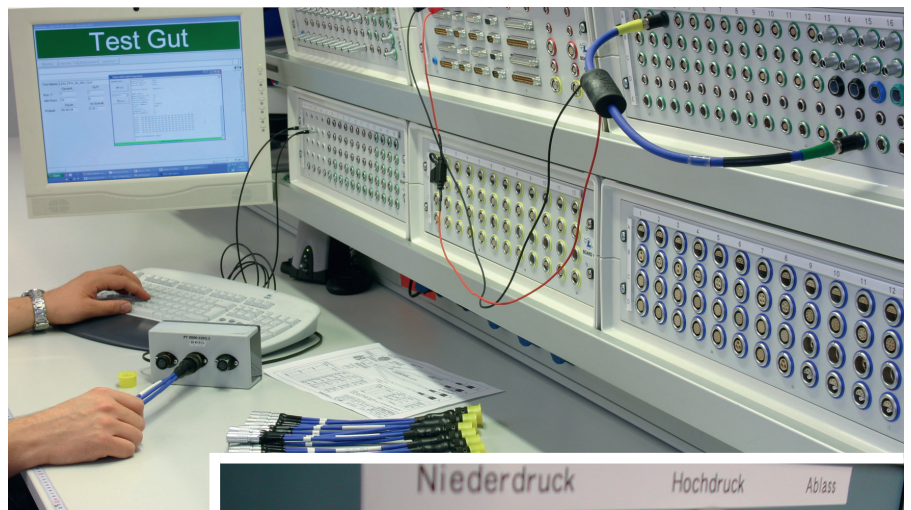
LEMO has multiple laser engraving machines at its headquarters and in some subsidiaries allowing us to customize products for our clients. Customization could include for instance the customer's part number, the customer's brand name or a serial number that can be used for downstream/upstream re-ordering. The laser engraving enables bypassing the use of printed labels on some occasions. Printed labels will eventually wear out in harsh environments or if the assemblies sustain repeated sterilisation.



## HIGH PRESSURE TEST - UP TO 120 BARS/QUALITY CONTROL

For specific cable assemblies used in deep sea (high pressure), LEMO is able to test sockets, cable assemblies or cable branches up to a pressure of 120 bar in a hermetic tank using an automatic pressure console. These cable assemblies can be used in shallow water applications, nuclear power plants, oil pipeline technology, atomic physics, or automotive industry and many others.

100% inspection testing ensures cable assemblies with zero defects. Testing allow us to control the quality output and to pro-actively improve the termination of the harnesses. This final control is done before packaging and shipment.



## FIBRE OPTIC ASSEMBLY

LEMO has been specialising in the termination of both fibre and hybrid cable since 1991, it has invested in equipment and skills to ensure that assembly termination is of the highest standard at subsidiaries around the world. It also provides termination instruction and fibre optic training courses to allow companies to become LEMO certified cable assembly houses.

The termination of cable to connector is the most vulnerable part of the system, using the best connectors and cables are of little use if incorrectly made. The use of spring-loaded contacts means there must be room in the connector for the fibre to move thus avoiding microbending, however the connector needs to be terminated properly to ensure that any cable movement does not affect the connector's performance.

LEMO has many connector variants and contacts for both fibre and hybrid cables one of most well-known connectors used in the broadcast industry is the SMPTE connector (3K.93C) terminated using high quality cables, to guarantee long life in the field. Other assemblies of standard fibre optic connectors and cables including singlemode and multimode fibres are carried out to a high standard using dedicated tools and equipment.

Visual inspection, optical and electrical test equipment are used so assemblies are 100% tested prior to shipment.

## OTHER ASSEMBLIES - PATCH PANEL, BOX

LEMO offers patch panel solutions in various configurations. 1U, 2U or 3U rack, all patch panels are made of aluminium or stainless steel and precision drilled to the appropriate dimensions. These racks and enclosures can be for indoor and outdoor use and can be customized to meet customer specific needs. In addition, LEMO offers splice tray solutions for SMPTE/ TRIAX connector or wall box solutions and patching units. Patch panels can be equipped with LEMO SMPTE (EDW, FMW, PEW) models and patch cord assemblies.

Whether you need a large production run or a prototype, we can meet your requirements.







## CUSTOM SOLUTIONS

Contacts, connectors and integrated cable assembly solutions meeting 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

## NORTHWIRE

Founded in 1972 and based in Wisconsin USA, Northwire, Inc. is pleased to offer:

- Custom cable design and manufacture
- Rapid cable prototyping
- UL certified cables
- ISO 9001:2015 / ISO 13485:2016 (medical) / AS9100 D (aviation, space, defense)

Northwire leverages professional certifications in Lean, Six Sigma, Project Management and the American Society for Quality to achieve the highest level of quality with the shortest lead times for custom technical products:

- Wire and Cable
- Retractable Cords
- Cable Assembly
- A dedicated range of cables adapted to LEMO connectors



Find out more on [www.northwire.com](http://www.northwire.com)

## SUPPLY CHAIN MANAGEMENT

In order to be able to offer most of its 75,000 products with short lead times, LEMO uses a 3-tier management approach to its connector inventory:

### Tier 1: Stock at the Factory

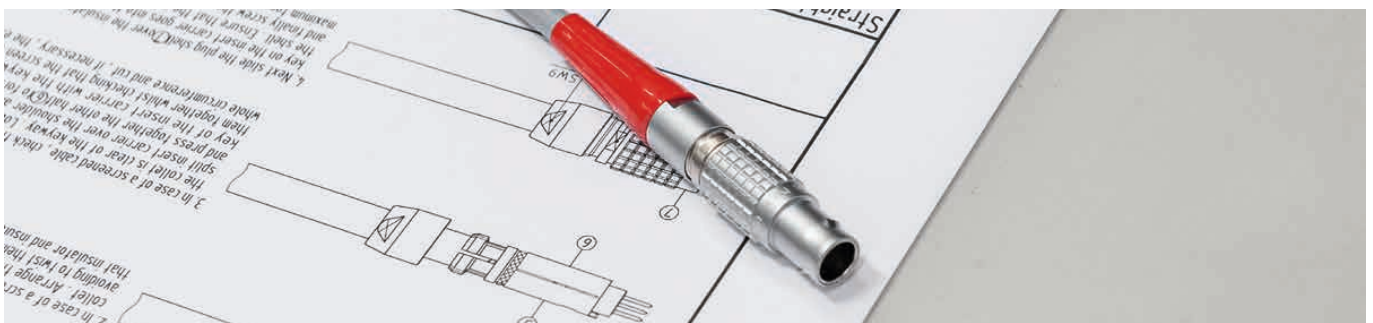
Applying industry-standard ABC safety stock techniques, the factory stocks components and subcomponents for the most common connectors.

### Tier 2: Stock at Subsidiaries

Subsidiaries such as LEMO Germany, UK, NL or the USA, maintain their own inventory optimized for their specific needs. In addition, subsidiaries offer Special Sales Agreements to stock bonded inventory per customer requirements.

### Tier 3: Authorized Distributors

In countries and regions where LEMO utilize distributors, LEMO requires these distributors to carry inventory.





## LARGE CHOICE OF CABLES

LEMO has a large choice of cables available from stock in USA, Germany, Netherlands and China. Simply tell us what you are looking for: cables that fit specifically to LEMO connectors, high voltage cables, impedance controlled cables such as RG 58 or RG 174, twisted pair ethernet and many more.

Some of these cables are made by major manufacturers under their own brand, some of the cables are manufactured under contract with the LEMO brand, other cables are manufactured from A to Z by our Northwire facility enabling us to produce exactly the type of cable you need.



Special cable  
and fibre optic



Northwire cables dedicated  
to LEMO connectors



SMPTE cables made  
by Northwire



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CHILE

COLOMBIA / PERU  
CZECH REPUBLIC  
GREECE  
ISRAEL

NEW ZEALAND  
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