THE WORLD OF LAPP

EPIC® Industrial Connectors

With his visionary ideas, company founder Oskar Lapp established the foundations of the company's successful history.

You can always rely on quality from Lapp – wherever you are in the world. This is also embodied by our strong brands.

INNOVATION FROM TRADITION

50 years of EPIC® connectors

Reliably connecting the world – in line with this motto, the established family company Lapp Group has been successfully operating on the market since 1957. As one of the leading manufacturers of integrated solutions and branded products for cable and connection technology, Lapp Group continues to stir up the industry with trail-blazing innovations. With his visionary ideas company founder Oskar Lapp established the foundations of the company's successful

history. For instance in 1959, he invented the first cable with colour-coded wires and branded it ÖLFLEX® – a name that quickly became a synonym for power and control cables. On the basis of the question "what is a cable without a connector?" Oskar Lapp developed the first EPIC® connector soon after to perfectly complement ÖLFLEX®. This represents an important milestone in the company's successful history.

In 1966, the invention of EPIC® industrial connectors convinced Oskar Lapp to establish a subsidiary called Contact GmbH for electronic components and this was the basis for today's versatile and continuously evolving Lapp Group connector range. Still today, the successful EPIC® brand made by Contact GmbH represents an integral component of the comprehensive Lapp product range – and it is also a worldwide best-seller.
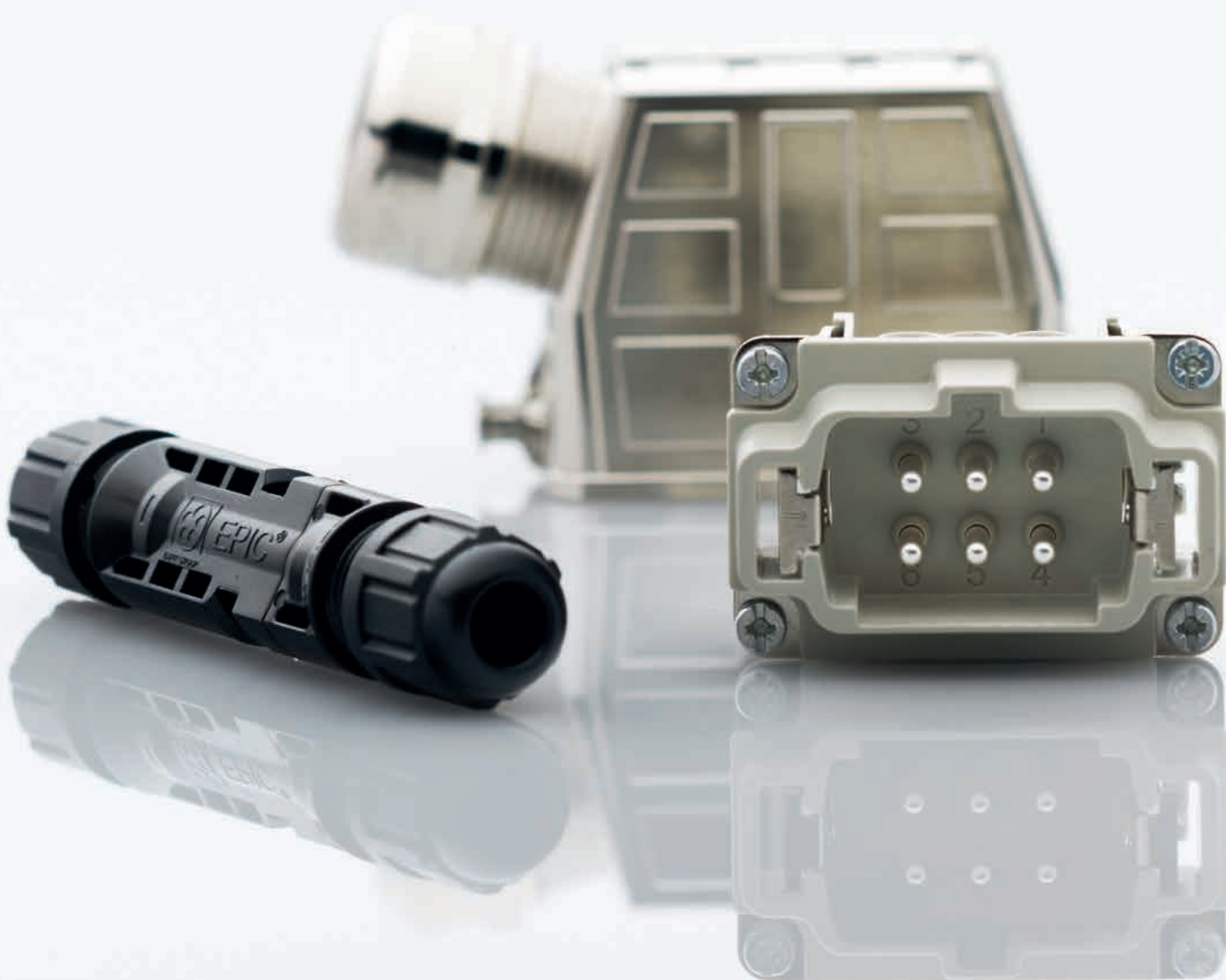
THE ENTIRE WORLD OF CONNECTORS FROM A SINGLE SOURCE

Be it electric mobility, wind energy, photovoltaic systems, a high-speed transmission of data or Industry 4.0 – as technological leaders we are always very close to the market,set industry standards and provide ourinternational customers with reliable connector solutions for any

conceivable application. Our manufacturing facilities, subsidiaries and logistics centres around the globe guarantee short distances, fair pricing and uniform quality standards. Rely on our over fifty years of manufacturer expertise in the field of connectors.

Incidentally:
Use the Connector Finder on our website to find the ideal connector solutions that meet your requirements with only a few clicks. We highly recommend you also test our housing configurator to configure your individual industrial connector housings, featuring an independent locking concept and customised cable entries.

products.lappgroup.com/productfinder

EPIC®
50
YEARS
Made by Contact Connectors

EPIC® connectors also help to supply power to the tunnel boring machines made by Herrenknecht in the Gotthard Base Tunnel

EPIC® – FOR WHEN THINGS GET EXTREME
EPIC® for the longest railway tunnel in the world

In June 2016, after more than 20 years of construction, the Gotthard Base Tunnel in Switzerland, which will be the longest railway tunnel in the world at 57 kilometres, is set to be inaugurated. What hardly anyone knows is that EPIC® industrial connectors from Lapp have also contributed to the success of this construction of the century. In order to dig the two railway tunnels from north to south through 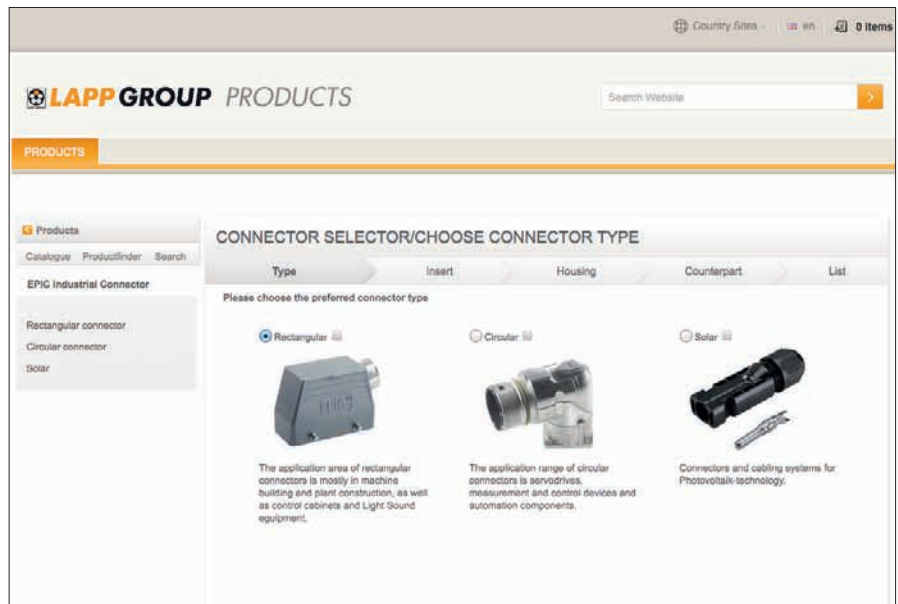the hard rock, four tunnel boring machines from the tunnel construction experts Herrenknecht based in Schwanau (Baden-Württemberg, Germany) were used. Just one machine (the so-called Gripper TBM) produces over 26 tons of pressing force, is 400 metres long and nine metres wide. This makes it possible to break down even the hardest stone. EPIC® connectors were used here as extension connectors, since the further the tunnel boring machine is driven into the mountain, the longer the cables for the power supply and controls must be. The EPIC® H-BE connectors were interconnected with housings and inserts every 50 metres to ensure that everything works reliably. These connectors are particularly suitable for higher voltages as well as currents and boast a high level of reliability. This is particularly important deep in the tunnel. Incidentally, the new tunnel will shorten the travel time for trains running between Zurich and Milan by an hour to just 2 hours and 40 minutes.

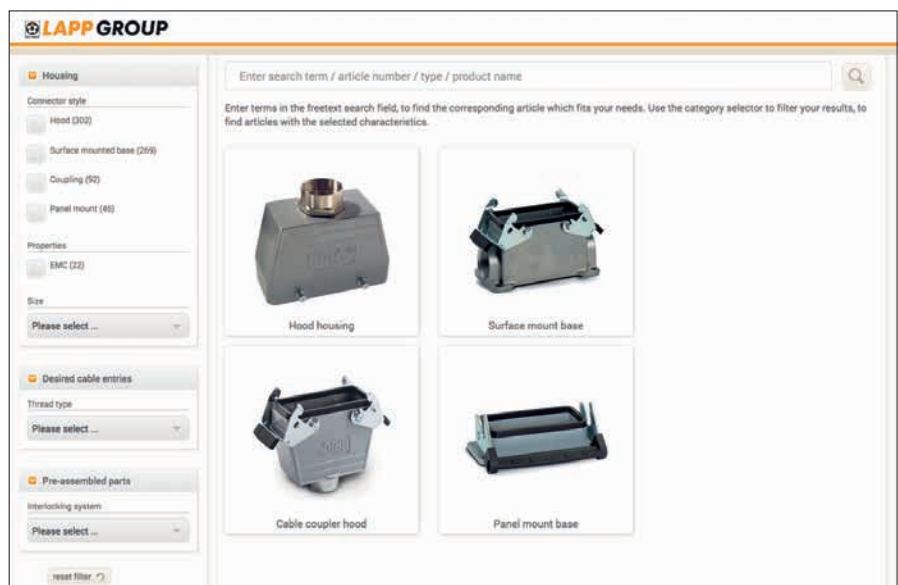# FINDING SOLUTIONS

EPIC® Connector Finder

Configure your own connector: design, insert, housing and counterpart. These four selections take you to the appropriate connector in just a few clicks.

http://products.lappgroup.com/connectorselector.html

Housing configurator

Configure your own individual industrial connector housing with locking concept and cable entries.

http://products.lappgroup.com/connector-housing.html

+ • Available as screw, crimp, spring-loaded, push-in and soldered variants
• Certified by UL, CSA, VDE
• Connection cross sections from 0.14mm² to 95mm² with between 3 and up to 280 contacts

EPIC® INDUSTRIAL CONNECTORS
flexible, robust connectors for mechanical engineering

EPIC® industrial connectors have successfully been in use around the globe in the most diverse applications for many years. EPIC® connectors are particularly valuable in situations where maximum safety and reliability are paramount. EPIC® rectangular connectors are available as individual components or as kits. As a result, customers can select from the best solutions to meet their demands in terms of housing, inserts and contacts. The main areas of application are:

- Electronics and telecommunications
- Measurement, testing and control engineering
- Industrial machinery and appliances
- Drive systems and industrial automation
- Photovoltaic systems

products.lappgroup.com/connectorselector

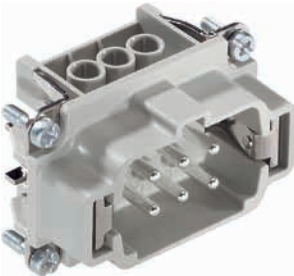## EPIC® RECTANGULAR CONNECTOR HOUSING

EPIC® – apart from the products' quality and reliability, tried and tested many times on the market, our customers greatly value the option to be able to almost completely define the cable entry of the housing to meet individual specifications.

products.lappgroup.com/connector-housing

EPIC® ULTRA – the high-quality, nickel-plated housing of this EPIC®ULTRA series provides even better corrosion protection. As a result of the outstanding EMC features of this surface, the connector provides perfect, low-resistance 360° screening thanks to the high-quality bolts and clamps made of stainless steel.

See the 2016 main catalogue for all variants, from page 589

EPIC® RECTANGULAR CONNECTOR INSERTS

EPIC® – fixed pin inserts guarantee safe and simple handling suitable for plenty of industrial applications.

EPIC® – modular inserts provide maximum flexibility thanks to modules customers can configure to suit their individual requirements. Users can configure modules for data, signals, output, FOC and pneumatics in any combination in one housing.

See the 2016 main catalogue for all variants, from page 534

EPIC® ACCESSORIES

Matching accessories are available for EPIC® housings and inserts. In addition to certified and approved crimping tools we also provide the matching assembly or disassembly tools. Protective covers made of impact-resistant plastic provide effective screening from environmental influences. Coding elements are suitable to prevent incorrect connections and protect the system. The range is rounded off by cover panels and spare parts for housings.

See the 2016 main catalogue for all variants, from page 577

- IP67 and higher protection ratings
- International approval
- Up to 660A/1000V at 240mm²

EPIC® CIRCULAR CONNECTORS
compact connectors for motion control and energy transfer

EPIC® – circular connectors are divided into the following categories:

• Signal connectors

• Power connectors

• Hybrid connectors

Signal connectors, the majority of which feature gold-plated contacts, are suitable for a transfer of sensitive signals.

Power connectors transfer high outputs and supply the application with the sufficient amount of energy. Hybrid applications merge both worlds in one housing.

EPIC® SIGNAL CIRCULAR CONNECTORS

EPIC® – SIGNAL connectors are available as M17, M23 and R3.0 (M27).
The EMC screen contact surface reliably prevents electromagnetic influences. Even the lowest currents and voltages are reliably transferred by the gold-plated contacts.

See the 2016 main catalogue for all variants, page 667

EPIC® POWER CIRCULAR CONNECTORS

The integrated EMC cable glands offer strain relief and are perfectly sealed. The high-quality sealing materials guarantee very high levels of chemical protection.

See the 2016 main catalogue for all variants, page 662

EPIC® POWERLOCK

EPIC® – POWERLOCK – these single-pin connectors transfer very high currents, are colour-coded and designed in different shapes to prevent incorrect connections and exclude any resulting hazards for users.

See the 2016 main catalogue for all variants, from page 693

- System voltages up to 1,500V
- Connection cross sections up to 10mm²
- International approval

EPIC® SOLAR CONNECTORS
durable connectors
for photovoltaic systems

EPIC® SOLAR provides cabling solutions for photovoltaic systems in all power categories. Configurable connectors for installers, junction boxes for module manufacturers and installation connectors as well as T distributors for inverter manufacturers. Lapp develops customised connection systems including for the most recent, technological generation of organic photovoltaic modules.

EPIC® SOLAR connectors and ÖLFLEX® SOLAR cables are a perfect match and they have been ideally configured to suit the demands of the photovoltaic industry.

EPIC® SOLAR 4

EPIC® – SOLAR the connector for easy, on-site assembly that can be configured to meet individual requirements. Simply insert the crimped contact into the housing and tighten it – done.
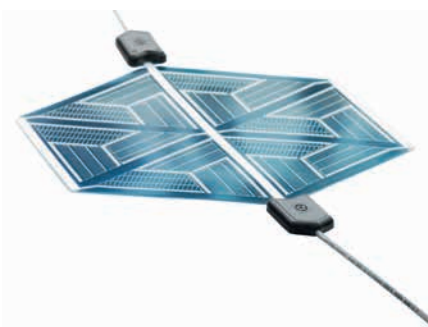
See the 2016 main catalogue for all variants, from page 703

EPIC® SOLAR SPLITTER

Connectors for photovoltaic systems to connect strings in parallel.

See the 2016 main catalogue for all variants, from page 705

EPIC® SOLAR MAP

EPIC® – map for organic PV modules. A technically and economically ideal solution for durable and safe connections in what can be extreme outdoor climate conditions.

See the 2016 main catalogue for all variants, from page 702

- Suitable for field configuration
- All conventional connector types available
- Certified by VDE

E-MOBILITY CONNECTORS
safely and continuously charge electric vehicles

Lapp Group is one of the first companies to develop a complete charging system with cables and connectors that complies with all relevant safety standards and is ready for series production in the form of LAPP CHARGE. Drivers of electric and plug-in hybrid cars are being won over by the charging system with its attractive and user-friendly design.

CHARGE CHARGING ADAPTER

The type 2 vehicle adapter is a connector that establishes the connection between the electric vehicle interface and the infrastructure side. Certified type 1 and 2 charging adapters for use on the vehicle side feature integrated resistance coding, protective caps and they are suitable for field configuration.

See the 2016 main catalogue for all variants, from page 264

CHARGE CHARGING PLUG

The type 2 charging plug is a connector that establishes the connection between the charging socket of the charging infrastructure and the charging cable set. The type 2 charging plug can be individually configured and is suitable for fast and safe assembly without the need for time-consuming cable processing and the use of special tools thanks to direct screw connections. The enclosed resistor enables the charging cable set to be coded according to the selected current rating.

See the 2016 main catalogue for all variants, from page 264

CHARGE CHARGING SOCKET

The type 2 charging socket is an add-on socket to charge electric vehicles on the infrastructure side. The applied easy-CONTACT technology allows effortless connection and disconnection of the charging plug thanks to silver-plated beryllium inserts. The silver-plated contacts guarantee excellent conductivity and corrosion resistance across the entire service life, even in extreme environments. The microcontroller is controlled by an electric motor and it is used in the charging plug locking system. The charging plug locking actuator allows locking and unlocking the type 2 charging plug at the charging socket and it guarantees a safe charging process and no-load cycles. LEDs have been integrated into the trim that can be used as a charging status display. Thanks to the RGB version the colours can be individually configured and adapted to the corresponding condition.

See the 2016 main catalogue for all variants, from page 262

EPIC® DATA CONNECTORS
for sensor/actuator and fieldbus connections

Do you need to perform quick cabling of sensors and actuators in the field? No problem thanks to our comprehensive range of field-configurable M8 and M12 connectors. Be it with conventional screw connections or time-saving fast connections. Thanks to metal variants with screen contact surface, shielded cables can also be safely connected in environments subject to EMC regulations.

We recommend M8 and M12 flush-type connectors with integrated strands for device connections suitable for PCBs or terminals.
In terms of fieldbus wiring, our EPIC® Data range provides connectors that can be assembled in the field for all conventional fieldbus systems:

- PROFIBUS DP
- CAN Bus
- DeviceNET
- ASI

We provide IP20 variants for application in control cabinets and IP67 variants for application outside control cabinets to comply with the different environmental conditions applicable to industrial applications.
Fieldbus connectors with reliable connection systems, such as screw-on, cage clamp and ID termination enable a free choice of preferred cable connection systems.

EPIC® DATA FAST CONNECT PROFIBUS CONNECTORS

Benefits

- Fast installation thanks to Fast Connect ("FC") technology
- Compact design: low space requirements
- No loose parts
- Visual bus connection monitoring
- Terminating resistor (integrated) can be easily activated or deactivated

Product features

- Fully compatible with market standards
- Max. transmission rate: up to 12Mbit/s
- Current consumption max. 12.5mA (with 35mA LED)
- Supply voltage 4.75 to 5.25 V DC (supplied by terminal device)
- Terminating resistor "ON" – the outgoing BUS cable has been disconnected

Standard references/approvals

- IEC 61158, IEC 61784
- UL file: E331560

Structure

- D-sub connector, 9-pin, 4-40 UNC fastening screws
- Improved EMC thanks to metallised housing
- Max. cable diameter: 8mm
- Versions with additional sub-D interface for programming/diagnosis ("PG")
- LED version status display:
  Bus mode - (green)
  Participant sending - (blue)
  Terminating resistor switched on - (orange)

See the 2016 main catalogue
for more variants,
from page 348

CONFIGURABLE M12 S/A CONNECTORS

Benefits

- Creating individual cable lengths
- Quick and easy on-site assembly
- No special tools required to connect cables
- Fast assembly thanks to IDC fast-connect connection type
- Simple connection with tried and tested screw connection technology

Product features

- 4, 5 and 8-pin versions
- Screened and non-screened versions
- Screw connection or piercing termination (IDC)
- No LABS
- Protection rating IP67

See the 2016 main catalogue
for more variants,
from page 391

CONFIGURABLE M12 POWER CONNECTOR

Benefits

- Compact and standardised M12 design saves space and costs
- Smooth, safe connection thanks to M12 T coding of the connector face
- Low voltage drop
- Highly flexible thanks to on-site assembly
- Safe application in the field thanks to high protection ratings
- DC connectors for high output (60 VDC/12 A)

Application range

- Automation technology
- Plant engineering, apparatus construction
- Tool shop
- Wiring of machines, tools, devices, appliances and control cabinets
- Suitable for use in measuring, control and regulating circuits

Product features

- Durable M12 circular connector with screw-locking system and metal knurl
- Screw-on terminals for connection to different conductors
- For conductor cross-sections between 0.75 - 1.5mm² (AWG 18 - AWG 16)
- Protection rating IP67

See the 2016 main catalogue
for more variants,
from page 405

- High transmission rates of up to 10Gbit/s
- Cat.5 to Cat.6$_A$
- High protection rating up to IP67
- Easy to install

EPIC® DATA CONNECTORS
for industrial Ethernet systems

In recent years, data communication systems based on Ethernet technology have become increasingly prevalent in industrial applications. The advantages of this are clear: with Ethernet technology, the fields of industrial machinery and plant engineering benefit from innovations from the IT sector. Simple interconnection via the internet becomes possible. The networks that can be created are practically limitless, when compared to the fieldbuses previously employed, and the complexity resulting from multiple, incompatible fieldbus systems is reduced.

To prevent failures, downtimes and quality issues, you can rely on the integrated, high-quality cabling and connection systems offered by the Lapp Group. Our wide range of EPIC®

data connectors is subjected to stringent checks in our test centre and laboratory. Do you require Ethernet connectors to suit exacting requirements, covering a diverse range of applications, suitable for harsh environmental conditions or with international approval?

Our range includes the perfect Ethernet connector for any industrial application – be it the RJ45 commonly used in offices or the M12 that has become standard in industrial environments. Thanks to the user organisations for industrial communication systems such as PROFINET®, ETHERCAT® and EtherNet/IPTM, various connectors have been standardised. Our connector solutions support system-compliant network creation. Ethernet connectors

from Cat.5 to Cat.6A enable data rates of up to 10Gbit/s.

Lapp ensures that every connector can be easily attached to the corresponding cable – without the use of special tools where possible. When connectors need to be routed through a control cabinet wall, panel feedthroughs with an IP67 protection rating are an ideal solution. This enables the creation of continuous Ethernet cabling from the devices in the control cabinet up to the field devices. If you do not wish to establish your own connections, but instead require a robust, fully assembled connection solution, you can use our ETHERLINE® preassembled cables with extruded connectors.

EPIC® DATA PN AX RJ45

Benefits
- For PROFINET applications
- Tool-free assembly

Product features
- For PROFINET applications
- Housing: zinc die-casting, grey
- Accommodation of cable diameters from 5.0 to 9.0mm thanks to multi-level cable support
- Suitable for braided conductors with AWG27/7 - 22/7 and for solid conductors with AWG24/1 - 22/1
- Suitable for use in industrial applications
- PROFINET colour coding for Cat.5 applications

Standard references/approvals
- Field-configurable industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-file E353543)

For other variants
see main catalogue 2016
from page 461

EPIC® DATA PN 90 RJ45

Benefits
- For PROFINET applications
- Tool-free assembly
- 4 different cable outlet angles possible

Product features
- For PROFINET applications
- Cable outlet can be positioned at 4 different 90° angles
- Housing: zinc die-casting, grey
- Suitable for braided conductors with AWG27/7 - 22/7 and for solid conductors with AWG24/1 - 22/1
- Suitable for use in industrial applications
- PROFINET colour coding for Cat.5 applications

Standard references/approvals
- Field-configurable industrial Ethernet connector, RJ45 according to IEC 60603-7-51
- UL-listed (E-file E353543)

For other variants
see main catalogue 2016
from page 461

EPIC® DATA M12X

Benefits
- CAT.6$_A$ compliant for 10Gbit/s
- Tool-free assembly

Product features
- Field-configurable industrial Ethernet connector, M12 X-coded according to IEC 61076-2-109
- Suitable for 10 Gigabit Ethernet
- Suitable for use in industrial applications
- Robust and vibration-resistant
- Housing: zinc die-casting, grey
- IDC contacts for conductor cross-sections AWG27/7 - AWG22/7 and AWG24/1 - AWG22/1; max. outer diameter of 9.7mm
- Tool-free assembly, small and compact design

Standard references/approvals
- Compliant with standard IEC 61076-2-109
- Complies with transmission category Cat.6$_A$ according to ISO/IEC 11801:2010
- Protection rating IP67

For other variants
see main catalogue 2016
from page 465

HITRONIC® CONNECTORS
for optical data transmission

In the face of ever increasing data volumes in telecommunication and industrial areas, optical data transmission systems are becoming ever more important. Wherever large data quantities have to be transmitted across long distances or in areas subject to electromagnetic interference, fibre optic cables represent an ideal complement to copper-based networks. HITRONIC® connectors ensure interference-free and interception-proof transmission of large data volumes, with utmost ease and virtually at the speed of light. Moreover, the data

transfer is not impaired by electromagnetic radiation. To complement the optical cables, the HITRONIC® range includes suitable connectors for all transmission technologies: POF (polymer optical fibre), PCF (polymer cladded fibre) and GOF (glass optical fibre). For the most demanding conditions and reliable application in industrial environments.

Our range also includes suitable tool sets to ensure quick and simple installation of the optical connectors.

Application range

- Telecommunication and network technology
- Industrial cabling and automation systems
- Industrial machinery and plant engineering
- Data transmission under harsh conditions (mining and tunnel construction, oil and gas platforms, wind power plants)

GOF

Application range
- For connector assemblies in production or laboratory environments

Product features
- Connector set includes all necessary individual components
- Standard connector for glass fibre: LC, SC and ST

Standard references/approvals
- LC complies with IEC 61754-20
- SC complies with IEC 61754-4
- ST complies with IEC 61754-2

Structure
- Ferrule diameter:
  LC: 1.25mm (zirconia)
  SC, ST: 2.5mm (zirconia)
- Configurable for cable diameters from 1.7 to 2.1mm
- LC and SC connector sets available in green (single-mode APC), blue (single-mode PC) and beige (multi-mode)

For other variants
see main catalogue 2016
from page 525

POF SC-RJ

Benefits
- Crimp design for simple assembly
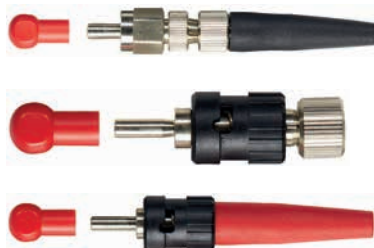- SC-RJ connectors for POF Connectors for PROFINET data cabling

Product features
- Connector set includes two SC connectors, SC-RJ housing, two anti-kink protectors, dust protection caps

- Suitable for 2.2 mm POF
- Anti-kink protection colour: black and red

For other variants
see main catalogue 2016
from page 495

POF F-SMA AND ST CONNECTORS (BFOC)

Benefits
- Crimp or terminal design for simple assembly
- FSMA- und ST(BFOC)-Stecker für POF

Product features
- FSMA and ST (BFOC) connectors with knurled or hexagon nut for crimping, gluing or simple clamping
- Suitable for 2.2mm POF

- Available for different cable diameters (2.2mm and 6.0mm)
- Connector including anti-kink protection and dust protection cap
- Anti-kink protection colour: black and red

For other variants
see main catalogue 2016
from page 494

PCF SC-RJ

Benefits
- Easy to assemble
- Suitable for field assembly
- Detachable for reuse
- Connectors for PROFINET data cabling

Product features
- Connector set includes two SC connectors, SC-RJ housing, two anti-kink protectors, dust protection caps
- Connector for clamp and cleave assembly

- Available for different cable diameters (2.2mm and 3.0mm)
- Anti-kink protection colour: black and red

For other variants
see main catalogue 2016
from page 504

ÖLFLEX®
Power and control cables

UNITRONIC®
Data communication systems

ETHERLINE®
**Data communication systems
for ETHERNET technology**

HITRONIC®
Optical transmission systems

EPIC®
Industrial connectors

SKINTOP®
Cable glands

SILVYN®
**Protective cable conduit systems
and cable carrier systems**

FLEXIMARK®
Marking systems

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