



# PLC

INNOVATIVE INTERCONNECT  
SOLUTIONS FOR AUTOMATION

EVERY CONNECTION COUNTS

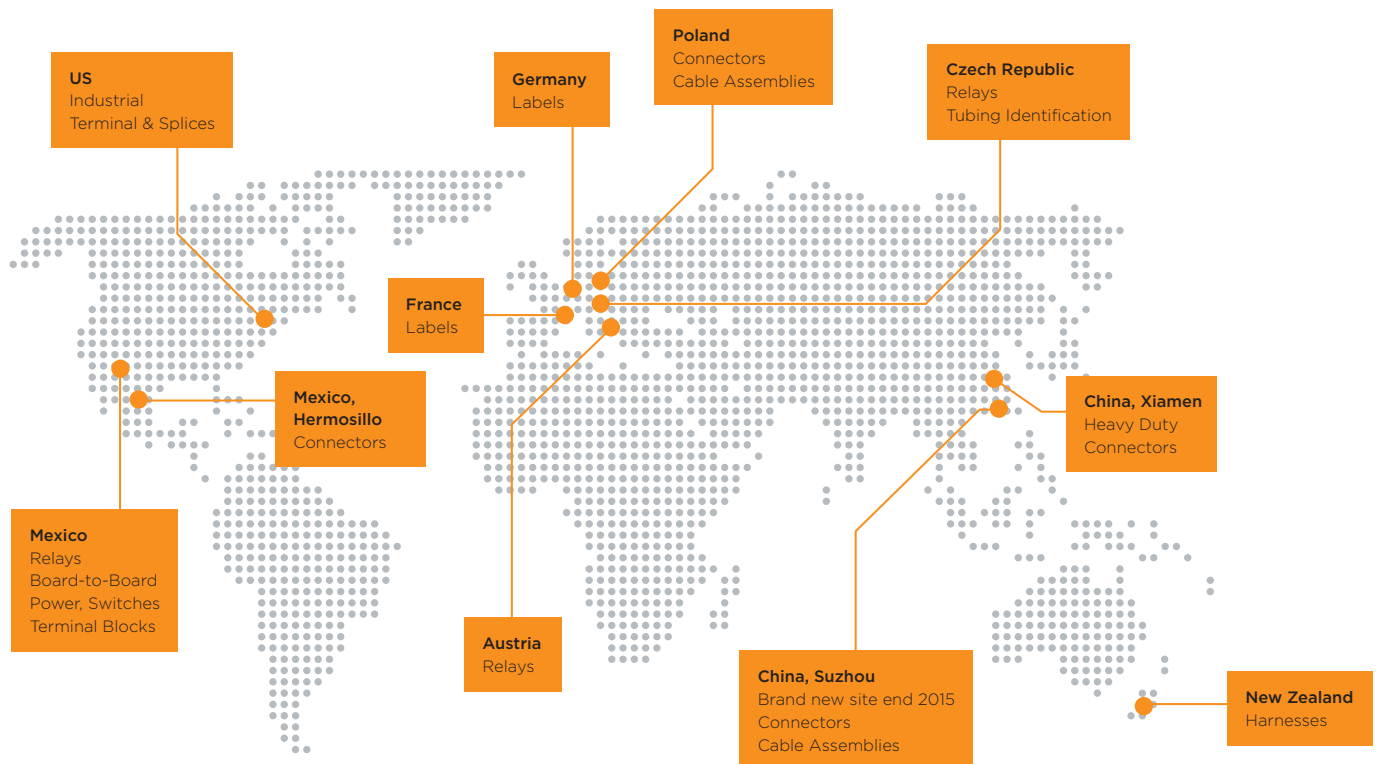
# LET'S CREATE THE CONNECTIONS THAT COUNT



TE Connectivity (NYSE : TE L) is a \$13 billion world leader in connectivity. The company designs and manufactures products at the heart of electronic connections for the world's leading industries including automotive, energy and industrial, broadband communications, consumer devices, healthcare, and aerospace and defense. TE Connectivity's long-standing commitment to innovation and engineering excellence helps its customers solve the needs for more energy efficiency, always-on communications and ever increasing productivity. With nearly 90,000 employees in over 50 countries, TE Connectivity makes connections the world relies on to work flawlessly every day.

# EVERY VISION IS MORE THAN JUST A COLLECTION OF GOOD IDEAS.

Welcome to Automation & Control. TE Connectivity is a major player in plant and mechanical engineering and industrial automation. We have been maintaining partnerships with leading companies in the automation industry in key markets such as Germany, Japan, the United States and China for around six decades.



TE Connectivity worldwide — our production sites

## COUNT ON TE. FROM DESIGN TO DELIVERY TO WHAT COMES NEXT.

Industrial production is increasingly driven by higher automation. By improved safety. By greater energy efficiency. You can count on TE to work with you every step of the way to develop solutions for every aspect of your production processes.

TE designs and manufactures products and solutions that connect and protect the flow of power, data and signal — in every aspect of our lives. We enable smarter, faster, better technologies to connect materials to end products — for all areas of life. This has made us a globally successful company — a world leader in automation and control technology. When it comes to ensuring the perfect solution, we meet every challenge.

## COUNT ON PRODUCTS THAT HELP YOU COMPETE.

Our broad electromechanical and electronic product portfolio covers all your needs, ranging from simple machinery equipment to fully integrated factory automation and process solutions. For applications in a wide variety of production environments — and always extremely close to the needs of our customers from a wide range of sectors.

With TE as your innovation partner, you'll find everything you need to create and operate a cost-efficient and highly reliable production process. We are at our best when we work with your early design product & process management teams to get the job done right from the start. We also offer continuous improvement programs that give you a real competitive advantage. Because you can't achieve greater productivity and efficiency without better connectivity.

# SMART TECHNOLOGY FOR TODAY AND TOMORROW.

Every vision starts with a big idea — and the absolute desire to face new challenges, develop new solutions and pursue new approaches. Our mission is to provide support for problem solvers in pursuing these approaches throughout the world. Working together to develop outstanding visions from big ideas — for innovations that make our world better.

## THE TE 4.0 MANIFESTO

# 01.

**IDENTIFYING OPPORTUNITIES:**  
FOR PERFECT INTEGRATION — AS EVERY  
CONNECTION COUNTS

# 02.

**TAKING UP CHALLENGES:**  
A NEW GENERATION OF PRODUCTS —  
FOR A NEW GENERATION OF CUSTOMER NEEDS.

# 03.

**CREATING SOLUTIONS:**  
YOU CAN RELY ON TE — AND ON INTERCONNECT  
SOLUTIONS THAT MEET THE CHALLENGES OF  
TOMORROW TODAY.

# 04.

**TURNING AIMS INTO REALITY:**  
GREATER PRODUCTIVITY, GREATER EFFICIENCY AND  
GREATER COST-EFFECTIVENESS — FOR YOU, YOUR  
CUSTOMERS AND A SMARTER WORLD.

## INDUSTRY 4.0 — THE NEXT INDUSTRIAL REVOLUTION.

The rising levels of automation and decentralization of industrial production present major challenges. Now more than ever, automation solutions need to impress with their profitability — through long operating times, optimized energy efficiency and lower costs.

Industrial production needs to improve in every aspect — both now and in the future — with increased reliability, flexibility, adaptability and decentralization, more automation and smarter connections. TE Connectivity offers innovative solutions for enhanced connectivity. From the PCB level to the production line, in the toughest production conditions, anywhere in the world.

## CONNECTIONS FOR A NEW GENERATION.

Digital technologies of today are key to the factories of tomorrow. These next-generation plants will be at the forefront of technological development and perfectly integrate and network the Internet, high-tech tools, employees and systems.

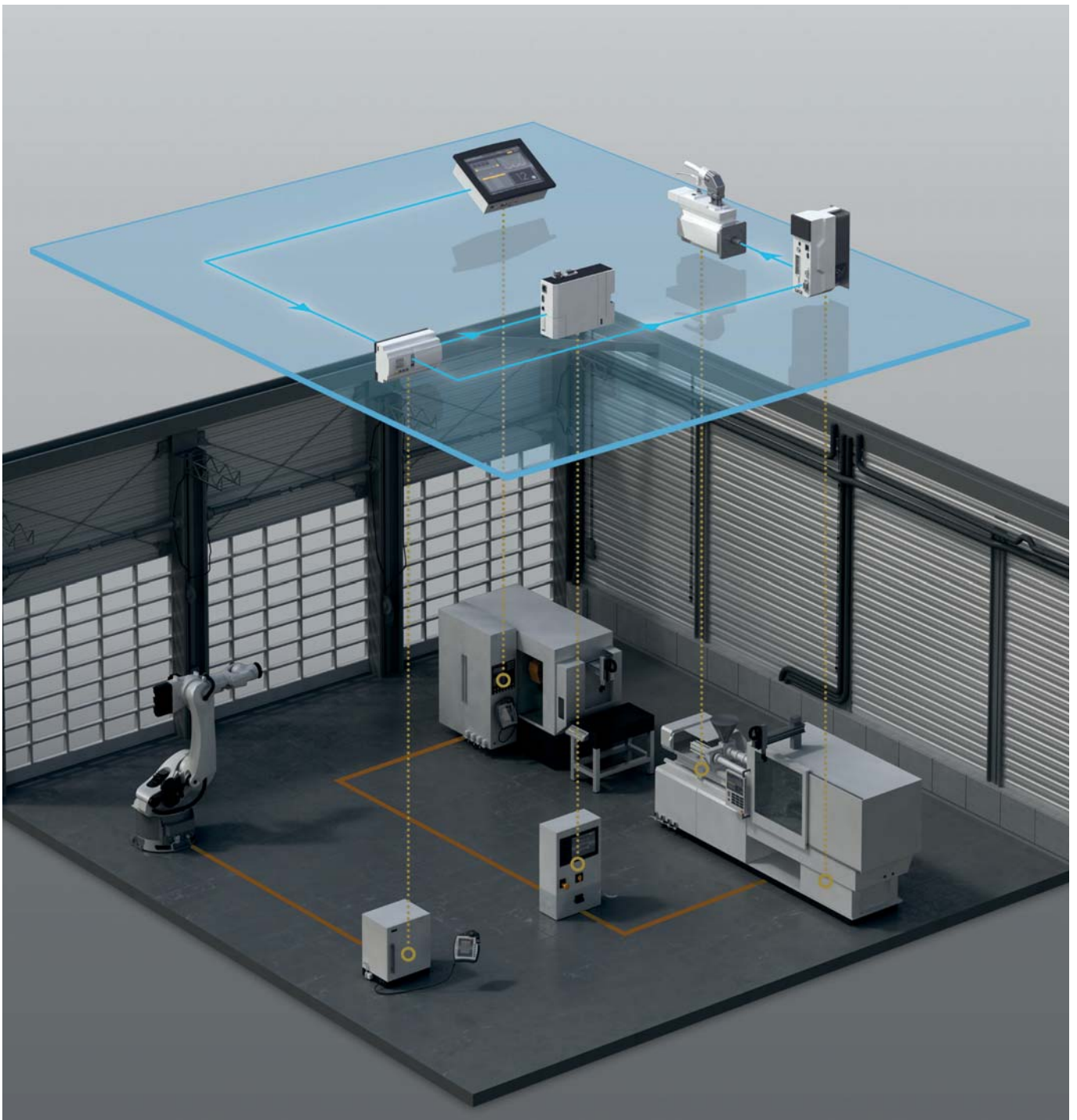
Our engineers here at TE are pioneers of this revolution — we are using our innovations to play a key role in turning the next level of industrial production into reality even faster.



# SOLUTIONS FOR AUTOMATION.

“WE ARE A SMALL PART OF YOUR BIG IDEAS, AS BETTER AUTOMATION  
IS FOUNDED ON BETTER CONNECTIONS.”

Gijs Werner, Strategic Marketing at TE Connectivity



# PLC. STABLE HIGH-SPEED INTERCONNECTION WITH TE.

As the level of automation in production sequences increases, so does the need for intelligent controls that can continuously monitor, measure and regulate processes in real time. To enable Programmable Logic Controllers (PLCs) to handle these extensive real-time functions effectively, TE Connectivity is developing products and solutions that allow a fast, absolutely reliable and interruption-free flow of data, even in large volumes.

## THE BASIS FOR INTELLIGENT PROCESS CONTROL. YOU CAN RELY ON TE.

In industrial automation, PLCs communicate with other control levels, assume monitoring and reporting functions and identify any process errors that occur. As intelligent entities, they assume important control functions and, despite the requirements placed on them growing all the time, they are becoming smaller, faster and more powerful.

This development is opening up new application options. And bringing new challenges. As the range of tasks they have to perform expands, the volume of data they need to manage is growing significantly. This makes high-speed connections vital for ensuring secure and reliable data flows.

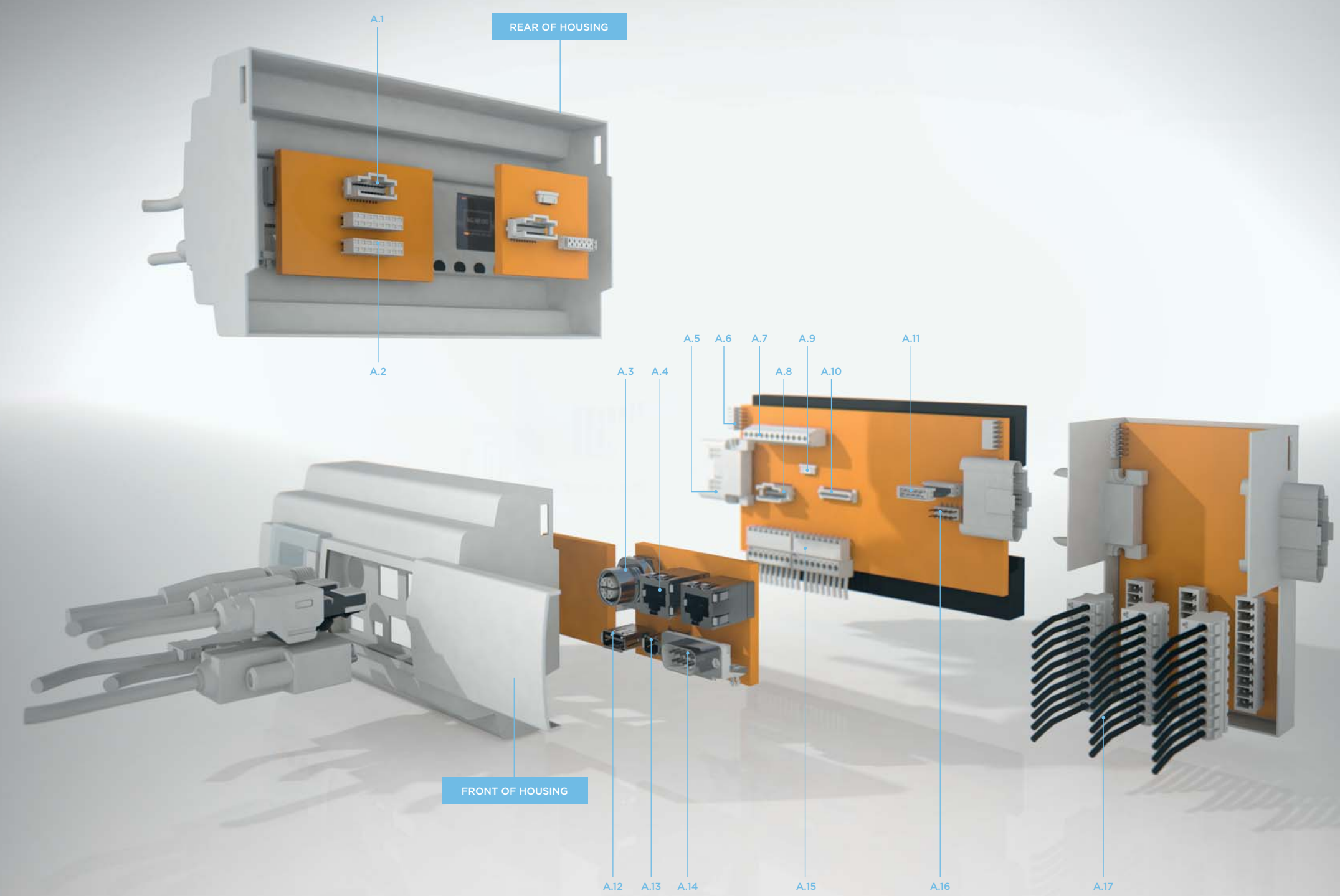
TE can offer you the perfect solution for this and other, future challenges. We are working on connections that are ever faster, more stable and more compact — to give you process control technology that is reliable, efficient and cost-effective.

## FOR GREATER RELIABILITY AND STABILITY — OUR SOLUTIONS ENSURE INTERRUPTION-FREE DATA FLOWS.

At TE we understand the special challenges facing the PLC market. We know your customers' requirements and needs and the importance of constant innovation.

To provide you and your customers with the best possible support, we use next-generation technologies to develop future-proof products that are more stable, user-friendly and faster to install. We are committed to growing your success — with reliable connectors that also give you maximum freedom in designing applications.

# PRODUCT OVERVIEW.



A. PRODUCTS	
A.1	1.27 MM AMPMODU CONNECTORS
A.2	2.54 MM AMPMODU CONNECTORS
A.3	M12-X-CODE CONNECTORS
A.4	INDUSTRIAL USB CONNECTORS
A.5	2.00 MM MINIPAK CONNECTORS
A.6	2.00 MM AMPMODU CONNECTORS
A.7	TERMINAL BLOCKS
A.8	1.27 MM AMPMODU CONNECTORS
A.9	0.50 MM FFC-FPC CONNECTORS
A.10	0.80 MM FREE HEIGHT
A.11	1.27 MM MICRO-MATCH CONNECTORS
A.12	INDUSTRIAL USB CONNECTORS
A.13	MINI I/O CONNECTORS
A.14	D-SUBMINIATURE CONNECTORS
A.15	TERMINAL BLOCKS
A.16	2.54 MM AMPMODU CONNECTORS
A.17	TERMINAL BLOCKS



**LET'S CREATE SOMETHING  
BRILLIANT TOGETHER**

WE ARE DRIVEN BY OUR WISH TO KEEP ON DEVELOPING. THAT'S WHY WE ARE CONSTANTLY WORKING ON INNOVATIVE INTERCONNECT PRODUCTS AND SYSTEMATICALLY IMPROVING EXISTING ONES. WE WORK IN TANDEM WITH YOU IN OVERCOMING EVERY CHALLENGE.

## THE LATEST GENERATION OF THE SIGNAL STANDARD IN AUTOMATION AND CONTROL.

TE's Industrial Mini I/O connectors are the latest generation of robust contact carriers for interruption-free interconnect solutions. Our Mini I/O connectors deliver greater vibration resistance and performance in harsh environments than other interconnect systems. They are also far more compact and require up to 75% less space versus Industrial RJ45 connectors.

Other key features: The AMPMODU family of connectors offers a wide range of modular PCB connectors in various configurations and centerline spacings — make sure you benefit from a new benchmark in design flexibility.



## TERMINAL BLOCKS



TE's Terminal Blocks offer design engineers a reliable connector system with a variety of connection styles and range of centerlines. This solution is used for various data, signal and power applications. This offering provides class leading quality and many different design opportunities.

### BENEFITS

- Mates with industry standard headers on the same centerline spacing
- Fast wire connections
- Custom solutions available

## AMPMODU CONNECTORS



The AMPMODU interconnect system is the proven TE solution and signal standard for Automation & Control applications. Designed to reliably and economically meet the packaging and interconnection requirements of today's industrial environments. It includes board-to-board, wire-to-board and wire-to-wire connectors. The large variety of components and application possibilities, combined with small size and outstanding quality, make the AMPMODU interconnect system ideal for many industrial applications and systems.

### BENEFITS

- Unique modular concept, utilizing precision formed receptacle contacts and mating posts
- Different configuration possibilities offer design flexibility
- Economic and compact design allows for space saving

## FLEXIBLE PRINTED CIRCUIT BOARD CONNECTORS (FPC)



TE Connectivity's Flexible Printed Circuit Board connectors (FPC) are interconnect solutions that are ideal where small centerline spacing makes larger wire-to-board interconnects impractical. As the market trends towards miniaturization, FPC connectors have been developed to meet the challenges of this expanding market, which demands smaller centerline or pitch spacing, lower profile heights and lighter interconnect solutions. The TE Connectivity FPC solutions are reliable interconnects that utilize an actuator to secure the cable termination and are field terminable (requires no tooling).

### BENEFITS

- Reliable interconnects
- Field terminable — no tooling needed
- Available in Right-Angle and Vertical mounting orientations

## FREE HEIGHT CONNECTORS



TE's Free Height surface-mount connectors are designed for parallel board stacking applications using subminiature connectors to meet today's electronic industry requirements for high density packaging. These FH connectors fit a broad spectrum of interconnect uses and are ideal for application downsizing, such as notebook PCs, scanners, data storage devices, and many other applications which require parallel stacked PCBs.

### BENEFITS

- Stack heights from 4 mm to 20 mm
- 40 — 440 positions
- Locating posts for proper positioning

## INDUSTRIAL MINI I/O CONNECTORS



TE's Industrial Mini I/O Field Installable connector provides innovative and time-saving wire-termination while also serving as a space-saving and reliable I/O solution for industrial environments. TE's Industrial Mini I/O connector is only one quarter the size of the conventional RJ45 plug and, as a result, provides space saving and the flexibility to use limited space on the PCB more effectively. Designed with two points of contact, this connector is built for the stringent demands of an industrial and high vibration environment, enabling increased productivity through a reliable connection. With its innovative piercing termination, the Mini I/O Field Installable version decreases the time usually needed to terminate the wires through soldering and, with an easy to use hand tool, field assembly in virtually any environment is now possible.

### BENEFITS

- Less downtime and reliable connections due to better vibration resistance than RJ45
- Space saving of up to 75% versus Industrial RJ45 connectors and increased design flexibility
- Easy, field installable solution

## M8/M12 CONNECTOR SYSTEM



TE Connectivity's M8/M12 Connector System for machine industrial automation and control applications provides a solution that safely and reliably ensures communication in industrial environments. TE's solution includes an extensive connector range of receptacles, cable assemblies and IO boxes, and provides users with an interface that supports higher bandwidth needs meeting the requirements of up to 10 Gb/s.

TE's broad product portfolio provides customers with shielded and unshielded cable assembly options in both Cat5e and Cat6A cable types. For re-wiring on site, a range of field serviceable connectors are provided that include male and female versions in multiple positions and codings. Additional styles are available on request including alternative mounting arrangements for panel mount connectors and double ended cable assemblies.

### BENEFITS

- Easily installable connector system reduces maintenance time
- M8/M12 Connector System provides full industry standard solution including quick turn, prototype cable assemblies

## D-SUBMINIATURE CONNECTORS

## INDUSTRIAL USB CONNECTORS

## INDUSTRIAL RJ45 CONNECTORS



TE Connectivity, the industry leader in D-Subminiature solutions, provides a complete range of quality, time-tested D-Sub connectors that have become the standard in the D-Sub industry. Our complete line of D-Subminiature connectors ranges from Right Angle and Vertical Posted connectors and Cable connectors to the AMPLIMITE .050 Series D-Sub connectors — for any complex application.

### BENEFITS

- Cable and PCB mounted D-Sub connectors
- PCB mounted D-Subminiature connectors available in either right-angle or straight configurations
- Stacked headers reduce overall total header volume by 48% and PC board area by 38%

TE's Industrial USB connectors are ideal for all industrial USB applications where a high locking force or a sealed design is required. With the IP20 series of Industrial USB connectors that feature an integrated locking mechanism with audible and tactile feedback, TE offers an excellent interconnect solution for internal USB cable routing. The newly designed locking feature helps prevent accidental pull-out of the plug, which enables customers to secure a cable internally without having to worry about the plug coming loose during transit and use.

### BENEFITS

- Rugged IP20 and Sealed IP67 solution for harsher environments
- Excellent lock strength for reliable connections and less downtime

TE's Industrial Ethernet RJ45 connectors offer a ruggedized design for use in Industrial Ethernet applications and are equipped with a robust and fast termination technology, utilizing the company's common core design in the RJ45 Modular Plug Series. This solution can be applied in the field without the need for any tools. It significantly reduces installation time and costs. It is used in all of TE's field installable connector series, including IP20, ODVA and push-pull connectors. The Variant 14 push-pull connector is available in a plastic or metal shell, and with its robust termination technology allows fast and flexible field installation that withstands harsher industrial environments such as shock, vibration or temperature.

### BENEFITS

- Field-installable modular plugs
- Easy and tool-less installation
- Ruggedized design for use in Industrial Ethernet applications

# CABLE SERVICES FROM A SINGLE SOURCE — TE CONNECTIVITY MEETS ALL YOUR NEEDS.

TE Cable Assemblies takes care of its customers, with total solutions that fit precise needs. With our decades of experience, global expertise in development and manufacturing and worldwide network of competence centers, TE Cable Assemblies creates customized solutions and standardized products that work exactly as they should — to ensure high performance and cost-efficiency in any operation. Our cumulative experience is formidable — and we never forget that every customer, and every project, is unique.

## **WE DELIVER FAST:**

FAST RESPONSE &  
IMMEDIATE AVAILABILITY

## **WE FOCUS ON SOLUTIONS:**

FLEXIBLE & EXPERIENCED

## **WE SAVE YOUR TIME:**

FAST & ON SCHEDULE

## **WE PROVIDE SECURITY:**

PROVEN RELIABILITY & HIGH QUALITY

## **WE WORK SEAMLESSLY:**

SMOOTH EXECUTION &  
CONSTANT COMMUNICATION

## **WE COMBINE POWER WITH FLEXIBILITY.**

TE Cable Assemblies is on hand to identify our customers' needs and objectives, map out the issues that need resolving, and quickly take all the steps necessary to move from design into production.

To provide fully integrated solutions, TE engineers in cable assemblies development work hand in hand with development teams dedicated to connectors — our engineering teams can leverage our vast portfolio of connectors to make sure any solution provides a perfect fit for a customer's needs. And when it comes to creating the assemblies themselves, numerous automatic and semi-automatic manufacturing technologies are at our disposal — cutting & stripping, soldering, IDC insulation displacement, over-molding, and more.

TE Cable Assemblies' manufacturing footprint is global too — wherever you are, we are well placed to respond to your needs in terms of flexibility, reliability, and lead times.

## **WE MAKE SURE OUR HIGH STANDARDS NEVER SLIP.**

Quality control is completely integrated throughout all our global manufacturing facilities. Furthermore, we apply the TE Operating Advantage (TEOA) — an enterprise-wide focus on business performance and continual improvement through waste elimination and deployment of best practices.

To meet numerous challenges all the way from concept to commercial product, we deploy processes such as Lean Product Development while dedicated project managers take care of your needs and potential issues. If a problem occurs, we will fix it.



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