



MOTION CONTROL

Innovative Interconnect Solutions for Automation

The background of the advertisement is a blurred image of server racks in a data center, with glowing green lights. Overlaid on this are several semi-transparent labels with rounded corners, each with a red and blue gradient bar on the left. The labels are labeled "NODE 01", "NODE 04", "E 05", and "NODE 03". Thin white lines connect these labels to the server racks.

LET'S CREATE THE CONNECTIONS THAT COUNT.

TE Connectivity (TE) is a \$16 billion global 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'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 more than 50 countries, TE makes connections the world relies on to work virtually flawlessly every day.

To connect with the company, visit te.com.

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

Connecting and Protecting the Flow of Power, Data, and Signal in Automation



TE Connectivity worldwide — our production sites

Industrial production is increasingly driven by higher automation, improved safety, and greater energy efficiency. You can count on TE to work with you every step of the way to develop solutions for your production processes. TE designs and manufactures products and solutions that connect and help protect the flow of power, data, and signal — in many parts of our lives. We support smarter, faster, better technologies to connect materials to end products. This has made us a globally successful company — a world leader in automation and control technology. When it comes to providing the perfect solution, we meet every challenge.

Our broad electromechanical and electronic product portfolio covers your needs in a wide variety of production environments, ranging from simple machinery equipment to

fully integrated factory automation and process solutions. Our trained, skilled engineers are driven to create something brilliant with you, and our outstanding customer support results in an extraordinary customer experience.

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 and 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.

Visit te.com to call, live chat, or email a product specialist today about your vision and connectivity needs.

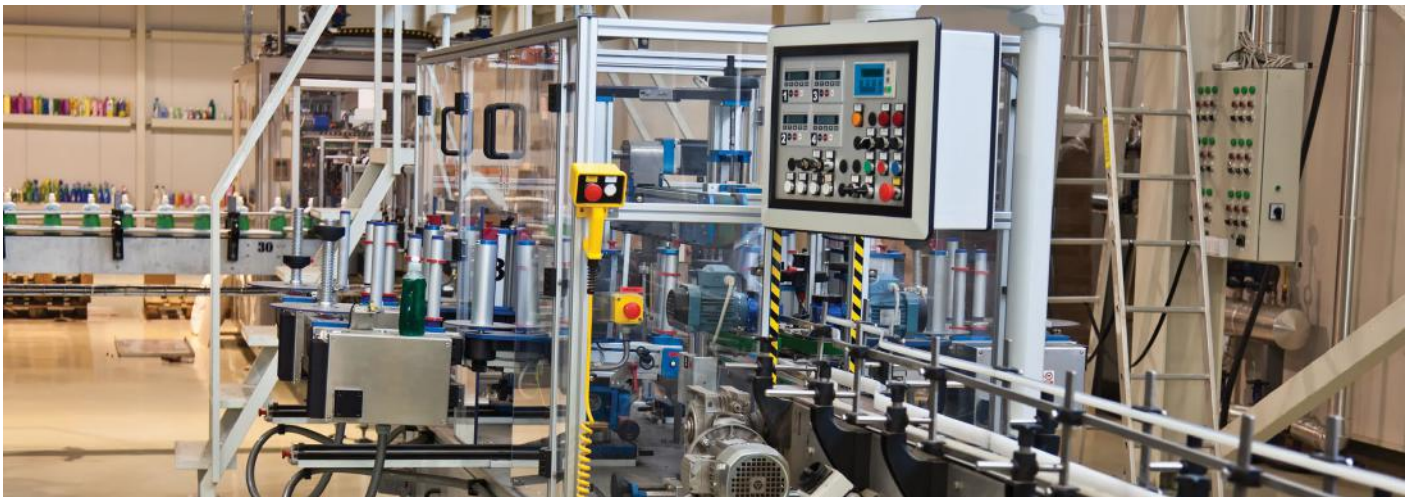
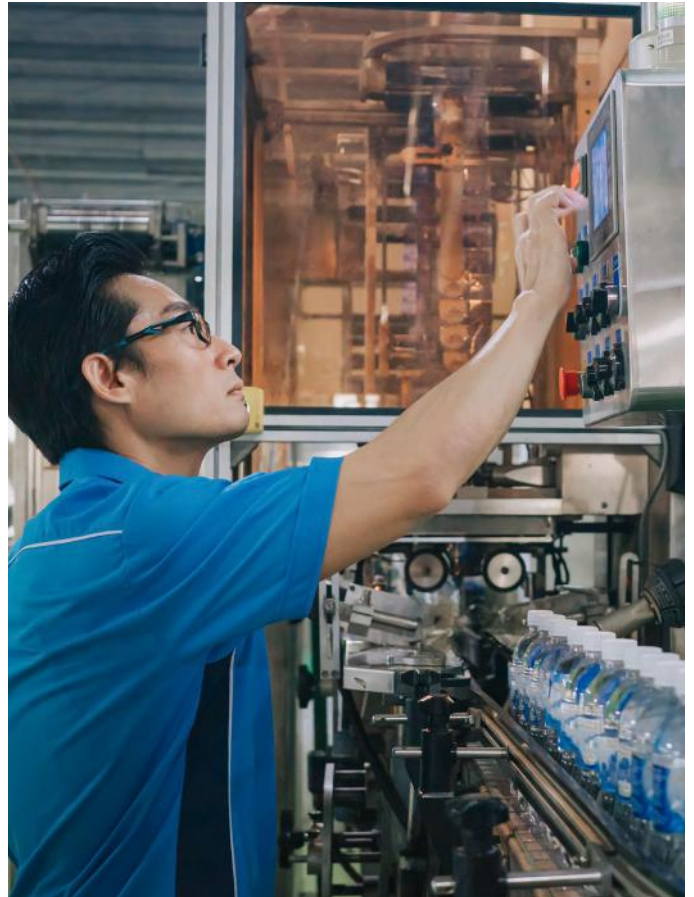
SMART TECHNOLOGY FOR TODAY AND TOMORROW.

TE-manufactured connectors and sensors help enable increased connectivity and communication, as well as driving toward factory digitization and automation.

Automation solutions are already standard in many industrial sectors, from automotive and packaging to textiles. Automated production plants controlled by servo technology can boost productivity and cost efficiency. Further advancements can only be achieved through even faster and more precise feedback and control processes — made possible through the interaction of servo motors and servo drives.

Motors today are becoming increasingly compact but are housing an ever-greater range of functions. Given the increased volume of data involved in communication with the drive, it is essential to have reliable connections that operate at the highest possible speeds. In addition, the numerous internal data and power interfaces need to be connected quickly, reliably, and efficiently.

At TE, we support you in meeting your customers' evolving requirements — thanks to servo technology that combines compact design, flexibility, and reliability with very impressive results. Our manufactured connectors and sensors have long been supporting increased connectivity and communication, inspiring transformation toward factory digitization and automation. To provide you and your customers with the best possible support, we use next-generation technologies to develop future-ready products — we work in tandem with you in making servo technologies even more reliable, efficient, and cost-effective. We are committed to growing your success with reliable, durable connectors that also give you maximum freedom in designing applications.



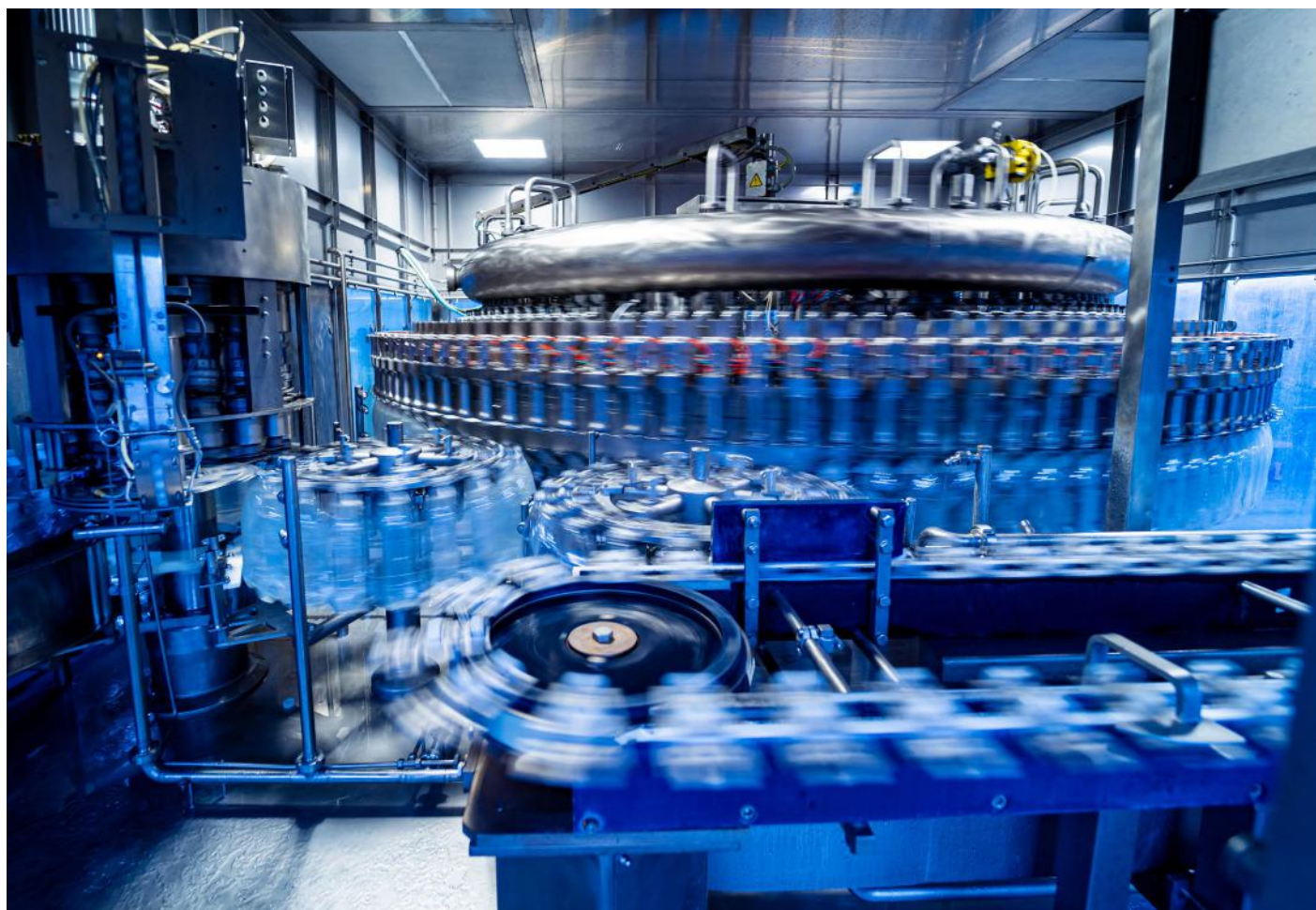
TE PROVIDES INDUSTRY-LEADING SOLUTIONS FOR MOTION CONTROL.

From the Printed Circuit Board (PCB) level to the production line, in challenging production conditions, almost anywhere in the world.

TE is a one-stop shop for smaller, faster, better, and safer connectivity solutions in harsh manufacturing environments. With one of the largest product offerings in the industry, we are a global market leader in motion and drives connectivity. Our deep application expertise supports us in taking a customer-focused, solutions-based approach to solving engineering challenges. As a result, we bring one of the best motion and drive connectivity portfolios to market. Our rugged and reliable high-speed connectivity solutions help enable cutting-edge production, and we offer the ability to co-create differentiated servo technologies that are efficient and cost-effective.

When you partner with TE, you get:

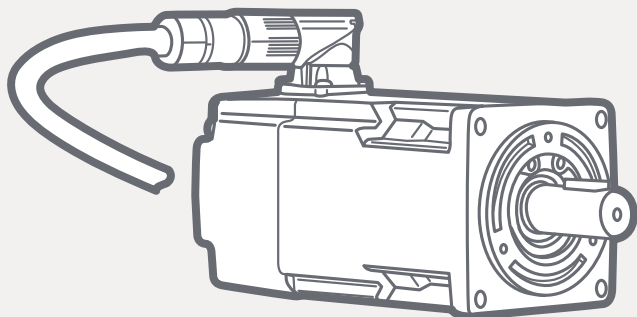
- **Significant electromechanical and safety experience** with deep understanding of communication protocols and requirements to help enable reliable connectivity solutions in harsh industrial environments.
- **Engagement in standardization committees** for the latest industry communication standards.
- **Fully integrated system solutions** for power, signal, and data.
- **Stronger, smarter, safer connections.**



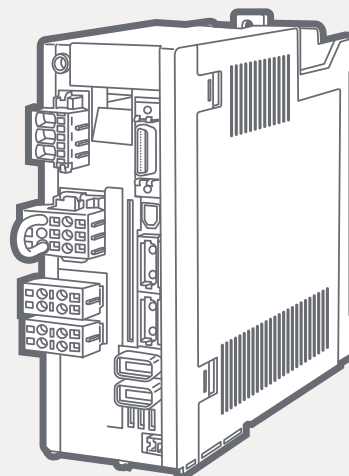
OUR SOLUTIONS FOR MOTION CONTROL SUB-APPLICATIONS.

As your go-to engineering partner, we can help simplify your supply chain and provide reliable, tailor-made components.

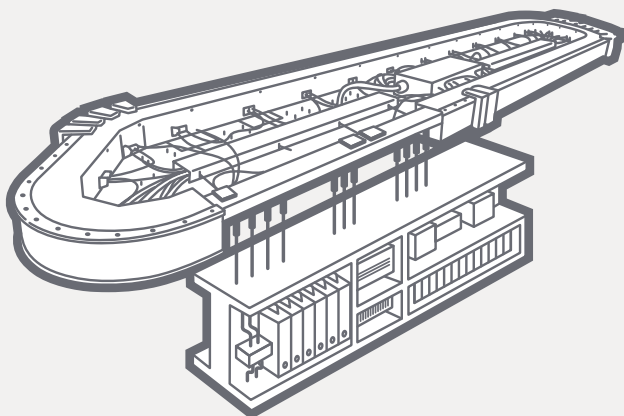
SERVO MOTORS



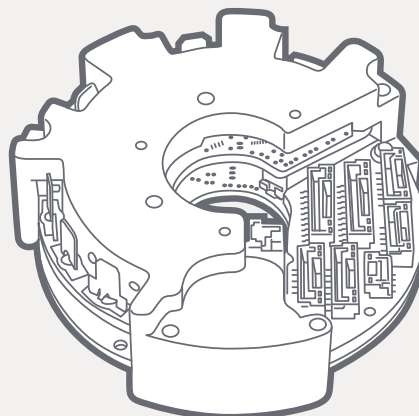
SERVO DRIVES



SMART CONVEYORS



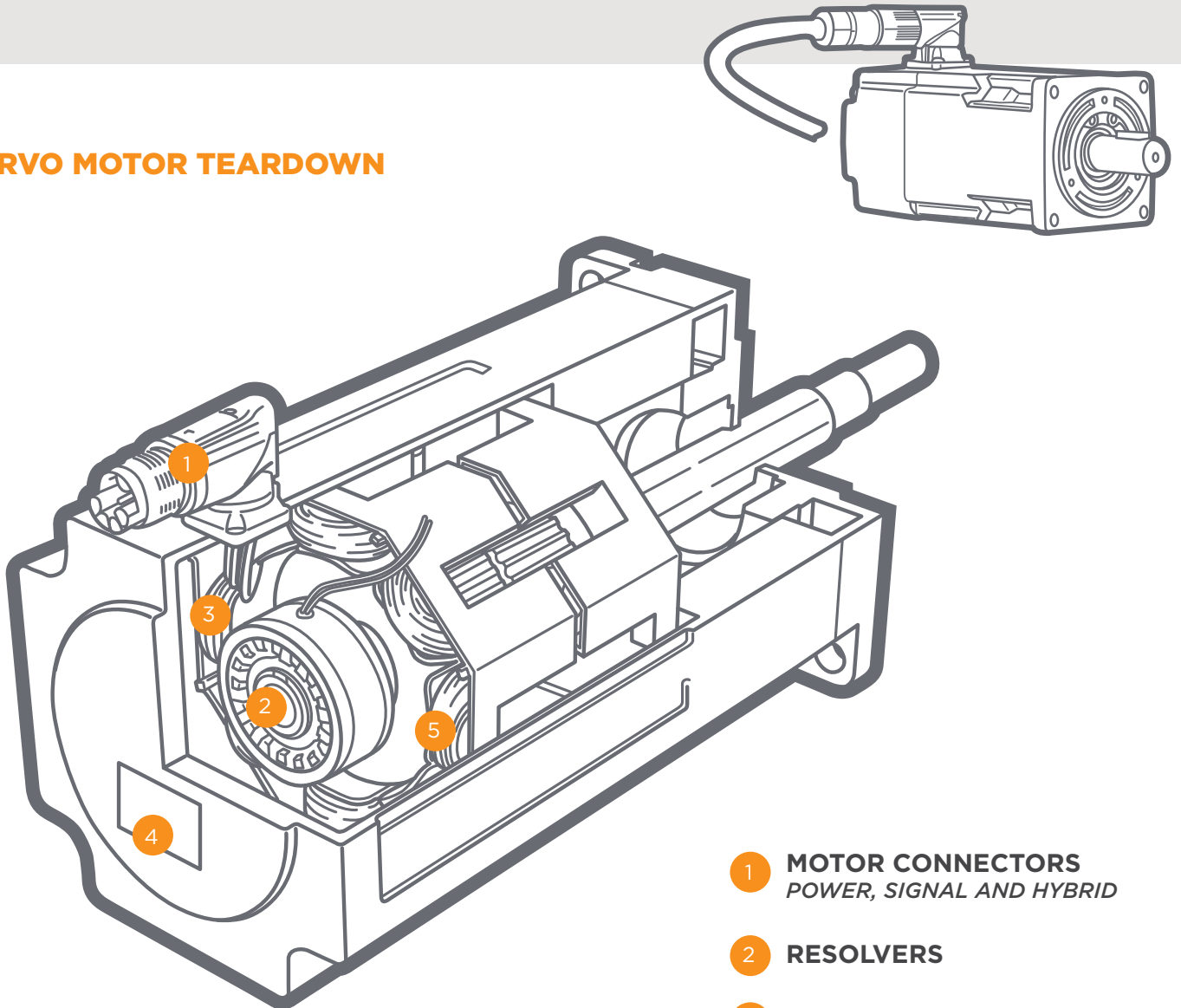
INTEGRATED MOTION CONTROLS



SERVO MOTORS

Servo motors allow precise control of angular position, velocity, and acceleration — all important factors in machine operation. Continued growth in automated processes and manufacturing is driving an increase in the number of servo motors per machine. The shift from asynchronous motors (such as induction motors) to synchronous motors (such as AC brushless servo motors) is driving efficiency gains. There is also greater interest in One Cable Technology (OCT) vs. two cables to reduce cost and size, provide a cleaner appearance, and make servo motors easier to install.

SERVO MOTOR TEARDOWN



- 1** **MOTOR CONNECTORS**
POWER, SIGNAL AND HYBRID
- 2** **RESOLVERS**
- 3** **TERMINALS AND SPLICES**
- 4** **LABELS**
- 5** **MAGNET WIRE CONNECTION**

MOTOR CONNECTORS (POWER, SIGNAL, AND HYBRID)



Wide portfolio of connectors specifically designed for motor applications.

BENEFITS:

- Reliable connectivity
- Quick and easy installation
- High operating temperatures
- High EMC/EMI protection thanks to 360° shielding; rugged shock- and vibration-resistant design
- Modular architecture that makes them highly compatible and usable in many different combinations

TE featured products:

INTERCONTEC Signal Connectors

INTERCONTEC Motor Connectors

INTERCONTEC Hybrid Connectors

Micro Motor

MOTOR FEEDBACK (RESOLVERS)



Rugged motor feedback systems that support high power densities.

BENEFITS:

- Can be used with high motor power densities due to an operating temperature up to 150°C
- Extremely rugged; vibration- and shock-resistant technology usable in harsh environments
- High accuracy of motor feedback to support applications with precise positioning needs, such as robotics

TE featured products:

Industrial Resolver

TERMINALS, SPLICES, AND CABLE IDENTIFICATION



Efficient wire identification and connection.

BENEFITS:

- Standard red, blue, or yellow color-coding per wire gauge for ease of installation
- Vinyl insulation sleeve that provides good dielectric strength and supports the wire insulation so that no bare wire is exposed
- Especially designed for inexpensive, insulated electrical terminations
- Max operating temp of 105°C at 600 V

TE featured products:

PLASTI-GRIP Terminals

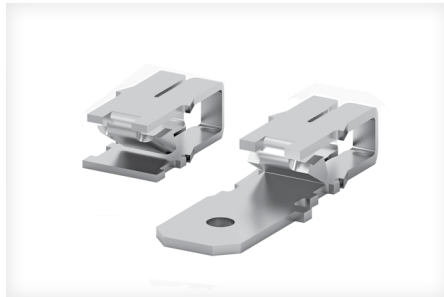
RPS-SCE Labels

Snap-On Markers

SBP Identification Labels

MOTOR NAME PLATE AND LABELS

MAGNET WIRE SOLUTION



Printable high-performance labels resistant to extreme environments.

BENEFITS:

- Good adhesion
- Suitability for a variety of industrial or commercial surfaces
- Superior performance in high operating temperatures
- Large portfolio of materials, colors, and sizes available

TE featured products:

[ESSW Labels](#)

[Polyester Labels](#)

[Panel Labels](#)

Cost-effective, flexible, and lean solutions for magnet wire termination.

BENEFITS:

- Suitable for use in high operating temperatures
- Designed for copper or aluminum magnet wires
- Available in multiple options for design flexibility

TE featured products:

[MAG-MATE Terminals](#)

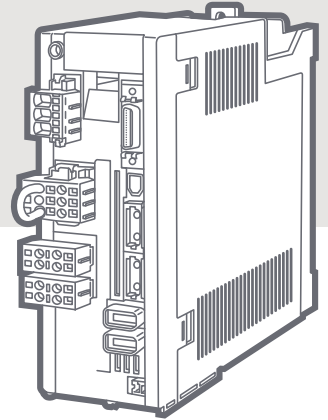
[SIAMEZE Terminals](#)

[AMPLIVAR Terminals](#)

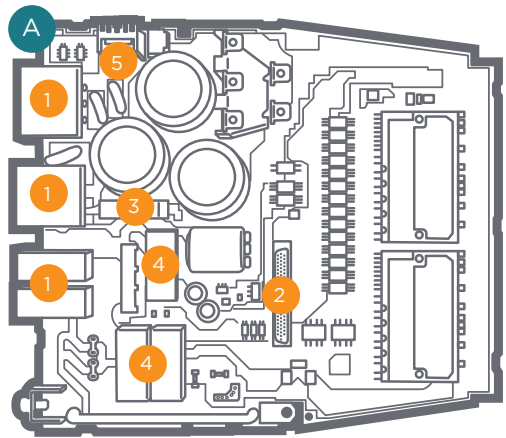
[Customized Magnet Wire Solution](#)

SERVO DRIVES

Available in standard and decentralized designs, servo drives receive a command signal from a control system, amplify the signal, and transmit electric current to a servo motor to produce motion proportional to the command signal. Typically, the command signal represents a desired velocity, but it can also represent a desired torque or position. There is a growing demand for decentralized architectures that place high IP-rated servo drives closer to the servo motor, which helps reduce component cost, panel size, and floor space and simplifies installation. This increases the need for modular machine solutions and compact and rugged connectors that allow miniaturization.

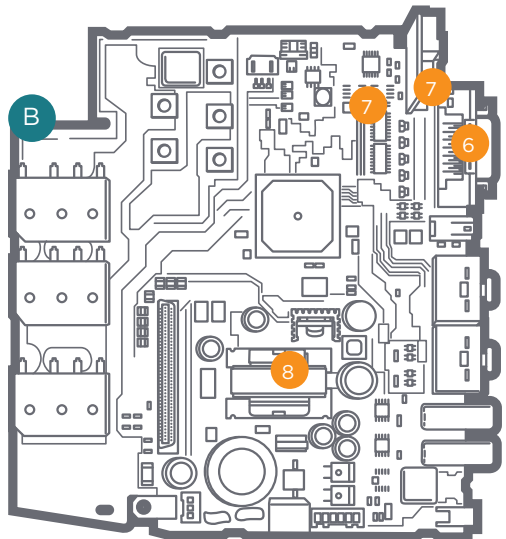


SERVO MOTOR TEARDOWN



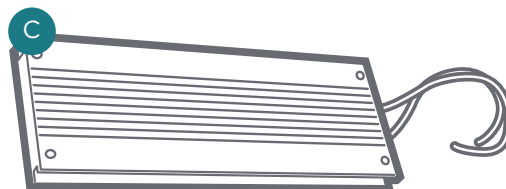
A POWER BOARD:

- 1 MAINS, DC-BUS AND MOTOR CONNECTORS
- 2 BOARD-TO-BOARD CONNECTORS
- 3 CHARGING AND DISCHARGING RESISTORS
- 4 RELAYS
- 5 EMC/EMI CHOKES



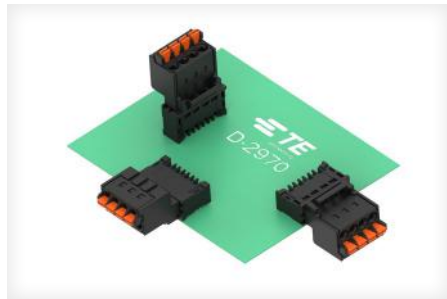
B CONTROL BOARD:

- 6 COMMUNICATION AND I/O CONNECTORS
- 7 SWITCHES
- 8 PRECISION AND POWER RESISTORS



C BREAKING RESISTORS

MAINS, DC-BUS, AND MOTOR CONNECTORS



Specially tailored for power connections in a small space.

BENEFITS:

- Efficient, reliable, and safer connectivity
- Excellent resistance to vibration and shock
- High-temperature versions available
- Extensive portfolio of designs for application flexibility
- Easier installation and maintenance

TE featured products:

Dynamic X950 Spring-Clamp Connector
 Dynamic D-2970 Push-In Connector
 Eurostyle Terminal Blocks
 Europa Terminal Blocks

I/O, SIGNAL, AND COMMUNICATION CONNECTORS



Supporting rugged standard data connectivity.

BENEFITS:

- Functionality in harsh and rugged environments
- Highly reliable rugged and cost-effective design
- Easier installation
- Large portfolio of styles and designs
- Small footprint that provides flexibility

TE featured products:

Mini I/O Connectors
 Amplimite Connectors
 RJ45 Connectors
 Industrial USB Connectors

BRAKING RESISTORS



Braking resistors for harsh environmental conditions and high power requirements.

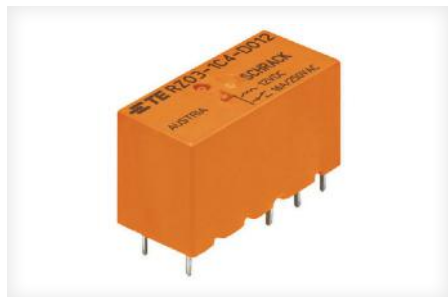
BENEFITS:

- High power and high temperature tolerance
- Different housing and mounting styles to support compact and ergonomic system design
- Product compliances that allow for safer operation in your application

TE featured products:

Aluminum-Housed Power Resistors
 Wire-Wound Power Resistors

RELAYS



High variety of problem-solvers from low load to high current switching.

BENEFITS:

- Broad portfolio
- UL- and VDE-certified products
- Redundant production lines to help secure supply
- Excellent endurance in harsh environments
- European-based manufacturing

TE featured products:

RT/RZ Relays

T9G Relays

T92 Relays

PCB CONNECTORS



Highly reliable connectivity and high contact density for board-to-board and wire-to-board connections.

BENEFITS:

- Small size to occupy as little space as possible on the PCB
- Design flexibility via a comprehensive portfolio
- Reliable performance
- Modular design capability
- Reliable connectivity

TE featured products:

ERNI MicroSpeed Power Module And Power Connectors

AMPMODU Connectors

ERNI SMC Connectors

Micro-MaTch Connectors

Mini VP Connectors

ERNI MicroCon Connectors

ERNI MicroStac Connectors

Micro Stack Connectors

ERNI Power Taps

LABELS AND IDENTIFICATION



Durable label solutions for extreme conditions.

BENEFITS:

- Strong adhesion
- High-temperature options
- Flexible adhesion for irregular surfaces

TE featured products:

T1K, T2K And TSK Labels

ESSW And LKZ Labels

MV And TN Labels

PRECISION AND POWER RESISTORS



Helping to enable high-precision electronics, plus board-circuit control and safety stop.

BENEFITS:

- More reliable, high-performance solutions
- Cost-effectiveness
- Broad portfolio of size and style options
- Wide tolerance range

TE featured products:

Precision And Power Resistors
Cement Housed Power Resistors

SWITCHES



Reliable, high-performance solutions designed to withstand extreme shock, vibration, temperature, and altitude.

BENEFITS:

- Cost effective
- Broad offering of PCB and panel mount options from DIP and tactile to power toggle/rocker and emergency stop switches
- Broad portfolio of switches and switch accessories available, including knobs, caps, boot seals and hardware

TE featured products:

Switches

EMC/EMI CHOKES



Current-compensated chokes with nanocrystalline core and ferrite core options. Offering standardized and customer-specific solutions and full engineering support.

BENEFITS:

- Cost-effective PCB designs for up to 100 A with forced cooling
- EIS (electrical insulation system E332676) for currents > 20 A acc. to UL 1446
- Compact size and light weight
- Low magnetic leakage flux
- Excellent winding insulation
- Standardized foot print
- Broad range of inductance ratings
- Custom-specific versions on request

TE featured products:

Schaffner EMC/EMI Chokes

HEAVY-DUTY CONNECTORS



Designed to transmit power, data, and signal in the toughest of conditions.

BENEFITS:

- Multiple options to meet application needs more accurately
- Flexible designs so customers can create a DIY interface for their equipment
- An industry standardized interface combined with TE's global footprint to help reduce customers' supply chain risks

TE featured products:

HDC Connectors

HYBRID CIRCULAR CONNECTORS (INTERCONTEC)



Reliable performance under harsh conditions.

BENEFITS:

- Quick and easy installation thanks to plug-and-play SpeedTec locking system
- Special crown clamp that provides virtually tool-free shield termination
- Helps save installation space, time, and cost via power, signal, and data in one connector
- High EMC/EMI standard thanks to 360 shielding, along with rugged shock- and vibration-resistant design
- Sealed solutions IP66/67 or higher

TE featured products:

INTERCONTEC Connectors

COMMUNICATION AND I/O CONNECTORS



Helping to enable rugged and reliable data connectivity.

BENEFITS:

- Design that is functional in harsh and rugged environments
- Small size that provides flexibility
- Easier installation
- Available hybrid solutions

TE featured products:

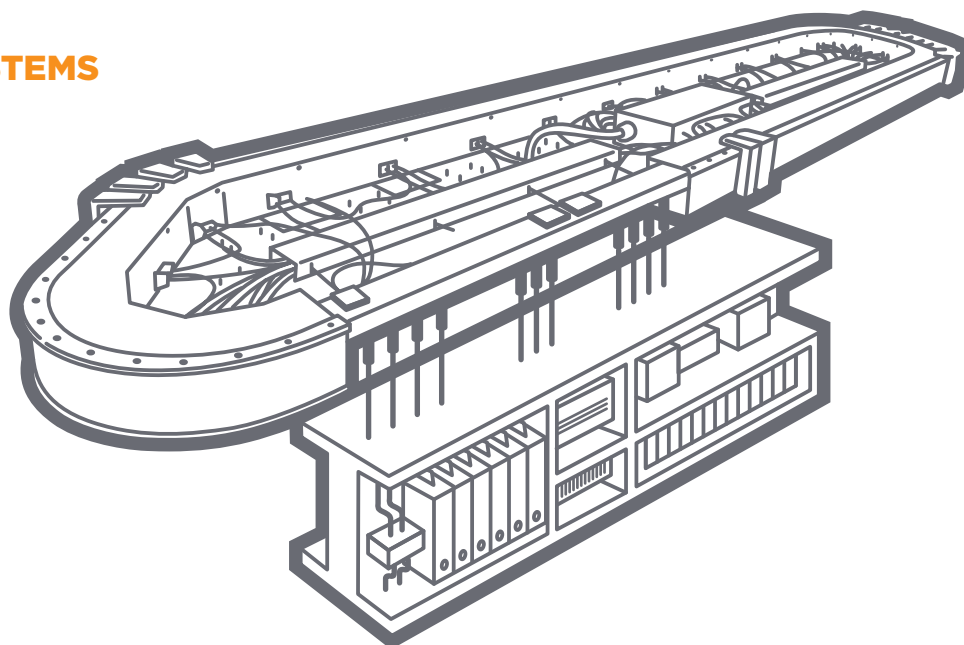
Mini I/O Connectors

M8/M12 Connectors

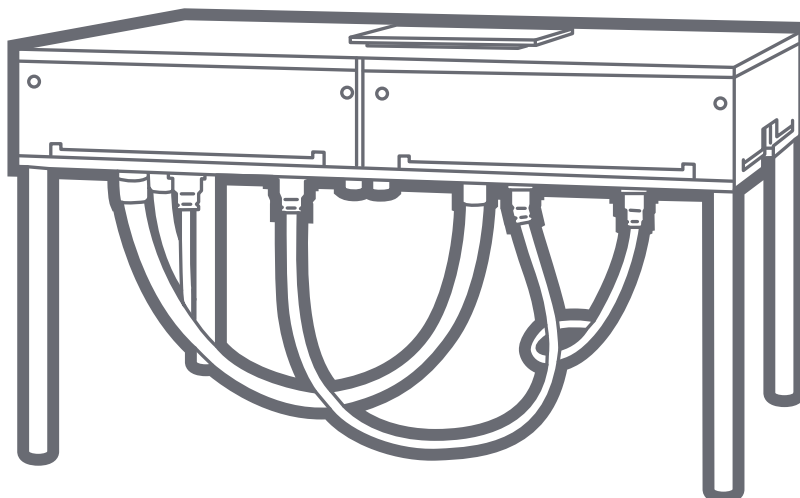
SMART CONVEYORS

Smart conveyors use precision motion and advanced technologies to enhance and improve industrial production operations, making them a growing choice across many manufacturing applications and industries. Increased demand for mass customization and personalization in consumer-packaged goods (which requires conveyors that are faster, smaller, and more flexible) has led to new-age motion control technology for both linear and planar-based transport systems. As customer demands change, there are shifting requirements for conveyor guidance controls, transfer capabilities, and other accessories.

LINEAR SYSTEMS



PLANAR SYSTEMS



CIRCULAR CONNECTORS

POWER, SIGNAL, HYBRID



Wide portfolio of connectors specifically designed for motor applications.

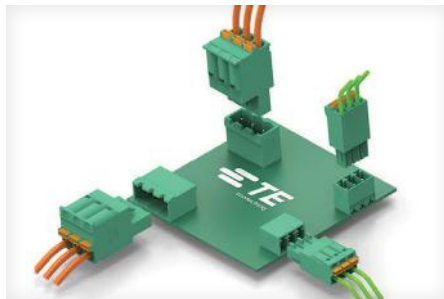
BENEFITS:

- Reliable connectivity
- Quick and easy installation
- High operating temperatures
- High EMC/EMI standard thanks to 360 shielding, along with rugged shock- and vibration-resistant design
- Modular architecture that makes them highly compatible and usable in many different combinations

TE featured products:

INTERCONTEC Signal Connectors
INTERCONTEC Motor Connectors
INTERCONTEC Hybrid Connectors
Micro Motor

PCB TERMINAL BLOCKS



Supporting excellent signal and power connectivity.

BENEFITS:

- Efficient, reliable, and safer connectivity
- Wide variety of options and styles available
- Reduced installation time
- High-temp and IR reflow-compatible versions

TE featured products:

BUCHANAN Push-In Clamp PCB Connectors
Board Mount Reflow Terminal Blocks
Unshroud Terminal Blocks
Multi-Level Stacking With Interlock Terminal Blocks

PCB CONNECTORS



Highly reliable connectivity and high contact density for board-to-board and wire-to-board connections.

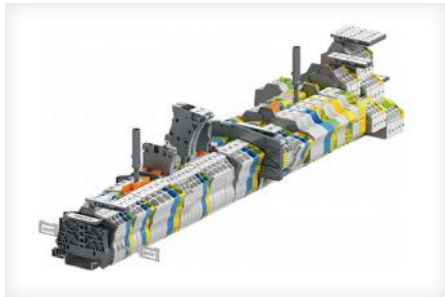
BENEFITS:

- Design flexibility via a comprehensive portfolio
- Reliable performance
- Modular design capability
- Reliable connectivity

TE featured products:

ERNI MicroSpeed Power Module And Power Connectors
AMPMODU Connectors
ERNI SMC Connectors
Micro-MaTch Connectors
Mini VP Connectors
ERNI MicroCon Connectors
ERNI MicroStac Connectors
Micro Stack Connectors
ERNI Power Taps

POWER TERMINAL BLOCKS



High-quality, easy-to-install terminal blocks.

BENEFITS:

- High performance and ease of use
- High reliability
- Wide-ranging connection capacity

TE featured products:

SNK PI-Spring

SNK Screw Clamp

EMC/EMI FILTERS



Wide range of single-phase and three-phase EMC/EMI filters available.

BENEFITS:

- High performance
- Compact design
- Variety of terminal connection options
- Certified to meet ratings

TE featured products:

Corcom EMI Single-Phase Filters

Corcom 3-Phase Power Filters

Schaffner EMC/EMI 3-Phase Filters

Schaffner EMC/EMI 3-Phase Filters

With Neutral

Schaffner Power Quality Products

CABINET PUSH BUTTONS, E-STOP



Rugged push buttons for harsh environments.

BENEFITS:

- Rating for harsh environments
- Various colors and icons
- High reliability and safety

TE featured products:

16mm Emergency Stop
Illuminated Push Button

BRAKING RESISTORS



Braking resistors for harsh environmental conditions and high-power requirements.

BENEFITS:

- High power and high temperature tolerance
- Different housing and mounting styles to support compact and ergonomic system design
- Product compliances that allow for safer operation in your application

TE featured products:

Aluminum-Housed Power Resistors
Wire-Wound Power Resistors

PRECISION AND POWER RESISTORS



Supporting high-precision electronics, plus board-circuit control and safety stop.

BENEFITS:

- More reliable, high-performance solutions
- Cost-effectiveness
- Broad portfolio of size and style options
- Wide tolerance range

TE featured products:

Precision And Power SMD Resistors
Precision And Power Chassis Mount Resistors
Cement-Housed Power Resistors

SWITCHES



Reliable, high-performance solutions designed to withstand extreme shock, vibration, temperature, and altitude.

BENEFITS:

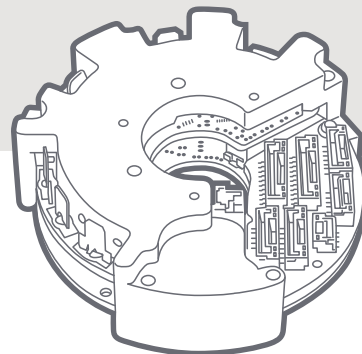
- Cost-effective
- Broad offering of PCB and panel mount options from DIP and tactile to power toggle/rocker and emergency stop switches
- Broad portfolio of switches and switch accessories available, including knobs, caps, boot seals, and hardware

TE featured products:

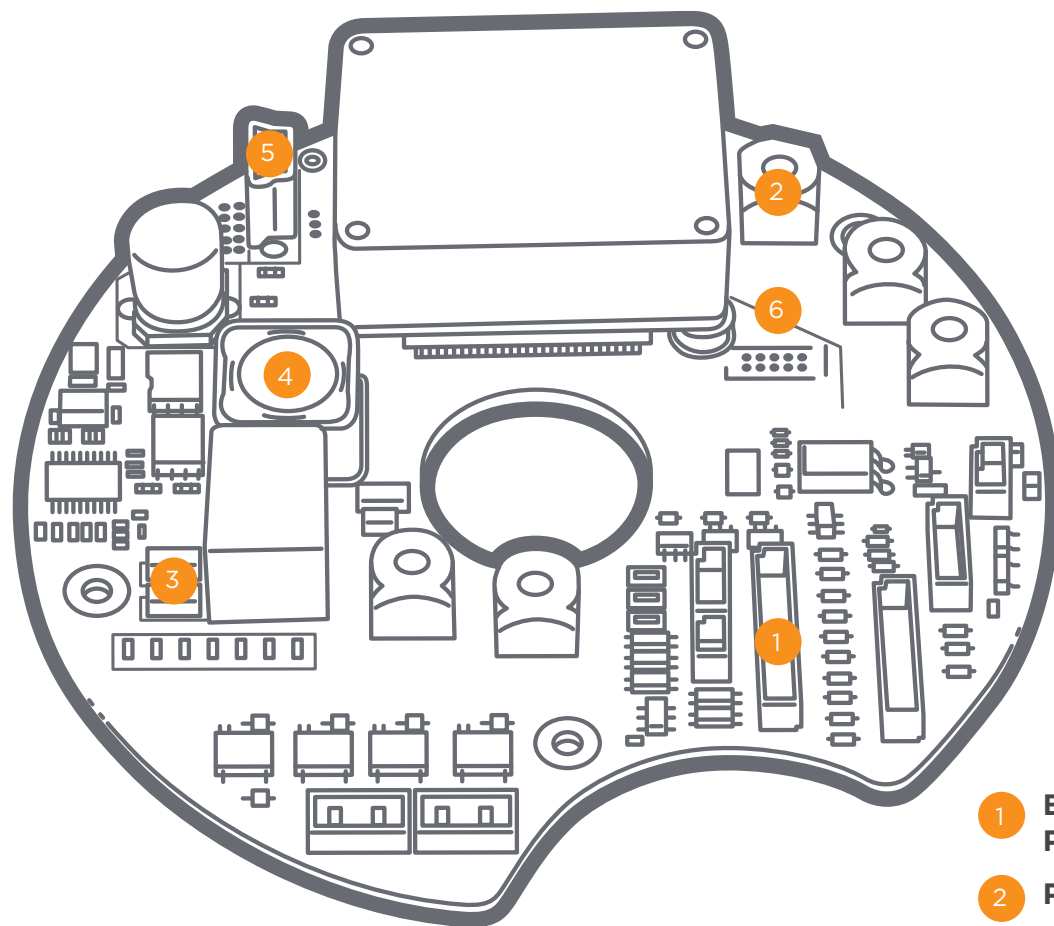
Switches

INTEGRATED MOTION CONTROLS

Integrated motion controls help allow integration of numerous capabilities into a single package, including operator interfaces, motion, programmable logic, and input/output devices. Advanced robotics that require sophisticated power-dense motion components for joints and linkages must run smoothly and precisely, often at high torque and relatively low speed.



INTEGRATED MOTION CONTROL TEARDOWN



- 1 BOARD-TO-BOARD FINE PITCH CONNECTORS
- 2 POWER TAPS
- 3 PRECISION AND POWER RESISTORS
- 4 SWITCHES
- 5 COMMUNICATION CONNECTORS
- 6 EMC/EMI CHOKES

BOARD-TO-BOARD FINE PITCH CONNECTORS



Highly reliable connectivity and high contact density for board-to-board and wire-to-board connections.

BENEFITS:

- Highly miniaturized connectors with solder clips
- Design flexibility via a comprehensive portfolio
- Reliable performance
- Modular design capability
- Reliable connectivity

TE featured products:

ERNI SMC Connectors
ERNI MicroSpeed Power
Module And Power Connectors
Micro-MaTch Connectors
ERNI MicroCon Connectors
ERNI MicroStac Connectors

POWER TAPS



Providing high flexibility for connections and developed especially for the power supply on the PCB and backplane.

BENEFITS:

- Ultra compact at 2.54 mm
- Easy wire-to-board combination with high current carrying capacity of up to 40 A at 20°C (operating current determined by characteristics of the PCB and the cable termination)
- Different variants in the portfolio to adapt to different design needs of customers

TE featured products:

ERNI PowerTaps

PRECISION, POWER, AND COMMODITY RESISTORS



Supporting high-precision electronics, plus board-circuit control and safety stop.

BENEFITS:

- Reliable, high-performance solutions
- Cost-effectiveness
- Broad portfolio of size and style options
- Wide tolerance range

TE featured products:

Precision And Power Resistors
Cement-Housed Power Resistors

SWITCHES



Reliable, high-performance solutions designed to withstand extreme shock, vibration, temperature, and altitude.

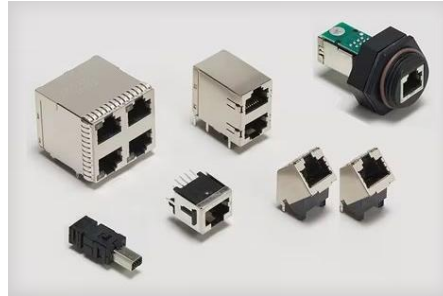
BENEFITS:

- Cost-effective
- Broad offering of PCB and panel mount options from DIP and tactile to power toggle/rocker and emergency stop switches
- Broad portfolio of switches and switch accessories available, including knobs, caps, boot seals, and hardware

TE featured products:

Switches

COMMUNICATION, SIGNAL AND I/O CONNECTORS



Supporting rugged and small power and data connectivity.

BENEFITS:

- Small size
- Fast field installation
- Reliable performance
- Functionality in harsh environments

TE featured products:

Mini I/O Connectors

M8/M12 Connectors

RJ45

Industrial USB Connectors

EMC/EMI CHOKES



Current-compensated chokes with nanocrystalline core and ferrite core options. Offering standardized and customer-specific solutions and full engineering support.

BENEFITS:

- Cost-effective PCB designs for up to 100 A with forced cooling
- EIS (electrical insulation system E332676) for currents > 20 A acc. to UL 1446
- Compact size and light weight
- Low magnetic leakage flux
- Excellent winding insulation
- Standardized foot print
- Broad range of inductance ratings
- Custom-specific versions on request

TE featured products:

Schaffner EMC/EMI Chokes

CONNECT WITH US.

Get answers to your questions now.

TE has a breadth of products to solve your application demands. Learn more about variable speed drives or servo motors and drives, or request a sample or drawing. We make it easy to connect with our experts and are ready to provide the support you need, including:

- [Motion and drives product information](#)
- [Discussions with TE engineers and product experts](#)
- [Project consultations](#)
- [TE design resources](#) and [tools](#)

te.com

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BROCHURE

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