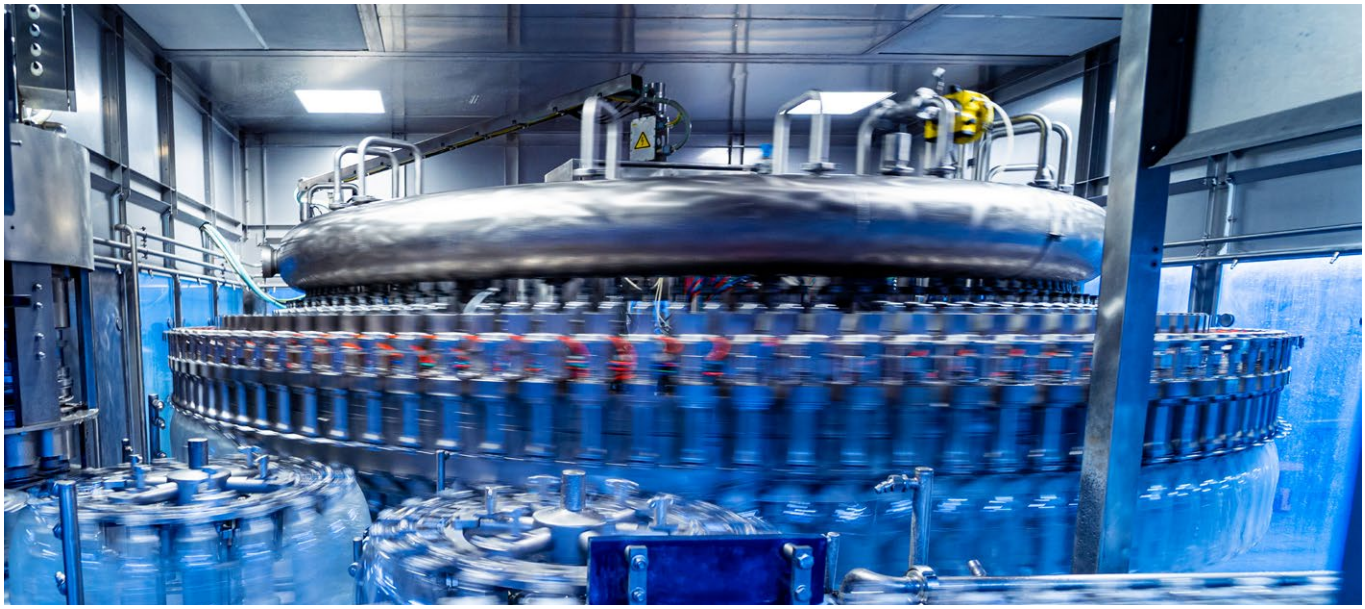


MOTION & DRIVES

Electrical products guide for motion & drives

LET'S CREATE THE ELECTRICAL 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 virtually flawlessly every day.

To connect with the company, visit te.com.

TE PROVIDES INDUSTRY-LEADING ELECTRICAL CONNECTION SOLUTIONS.

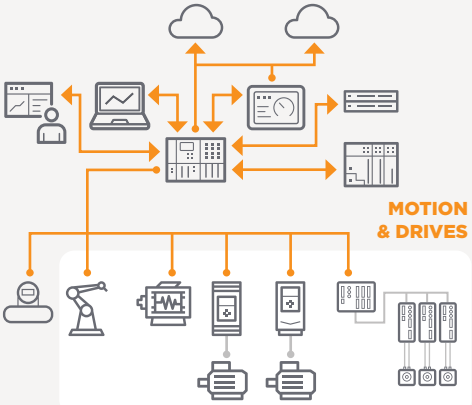
More Than 60 Years of Experience in the Industry of Motion & Drives

The growth of automation in the manufacturing industry has fueled high demand for motion control solutions. Sectors such as mobile robots, battery manufacturing, and material handling equipment are experiencing particularly strong growth. TE Connectivity (TE) is a one-stop shop for smaller, faster, better, and safer connectivity solutions in harsh manufacturing environments.

INDUSTRIAL AUTOMATION ARCHITECTURE

Motion & Drives is part of the industrial automation architecture, in the "actuators and controls" layer, also called "field layer"

Motion refers to the change in position of an object over time, and in an industrial context, it involves the controlled and purposeful displacement of components, tools, or entire systems. Drives, on the other hand, represent the mechanisms and systems responsible for transmitting power to move and control these various elements. Together, they form an integral part of automation, robotics, and machinery across industries, shaping the efficiency and performance of diverse applications. Motion & Drives are present in all industrial applications where there is movement, from water pumping to complex CNC machines.



SOLUTIONS FOR MOTOR CONTROL

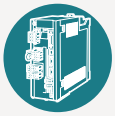
AC Motors
- Limited On/Off Control

Soft Starters (SS) and Motor Control Centers (MCC)
- Basic Soft Start/Stop Control

Variable Speed/Frequency Drives (VSD/VFD)
- Standard (speed only) and performance (torque and speed) control

SOLUTIONS FOR MOTION CONTROL

Servo motors
- High performance position, torque, speed control



Servo controllers and servo drives
- High performance position, torque, speed control of servo motors
- Centralized/decentralized

Smart conveyors
- High performance position, torque, speed control
- Faster, smaller and more flexible conveyors

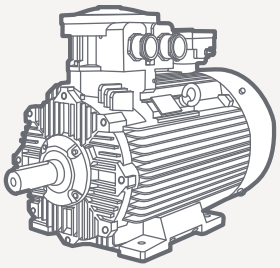
TECHNOLOGY NEEDS AND TE ELECTRICAL SOLUTIONS

WHAT YOU NEED	WHY YOU NEED IT	HOW TE CAN HELP
Increased performances in restricted & harsh environment	Technology trend is pushing to incorporate more power in more compact design.	We provide reliable, ruggedized electrical connections that enables cutting-edge production of motion & drives sub-applications like AC motors, soft starters, variable speed drives, servo drives and smart conveyors.
Increased machine flexibility	To meet new consumer demand for individualized products and unit packaging.	The large portfolio of electrical products for wire connection and termination, identification, helps motion & drives manufacturers to adapt to many standard and specific customer needs.
Modular machine design architectures	To allow for enhanced plant flexibility and improved customer responsiveness.	TE's expertise in electrical solutions enables greater freedom in application design with a large choice of functions, technologies, material, colors.

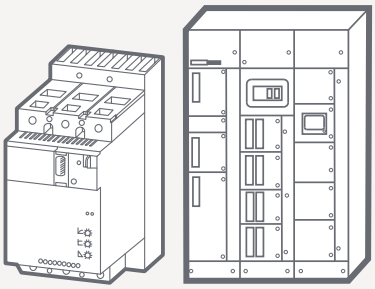
APPLICATION SOLUTIONS FOR MOTION & DRIVES

SOLUTIONS FOR MOTOR CONTROL

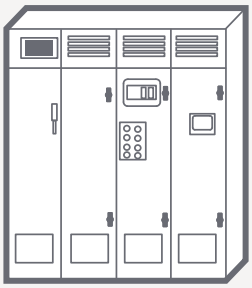
AC MOTORS



SOFT STARTERS MOTOR CONTROL CENTERS

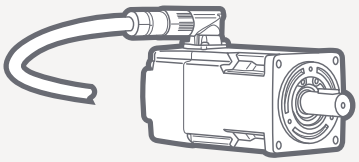


VARIABLE SPEED/ FREQUENCY DRIVES

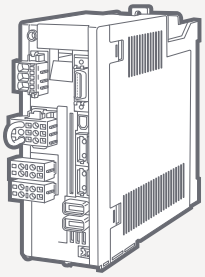


SOLUTIONS FOR MOTION CONTROL

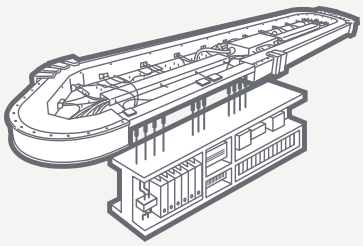
SERVO MOTORS



SERVO DRIVES

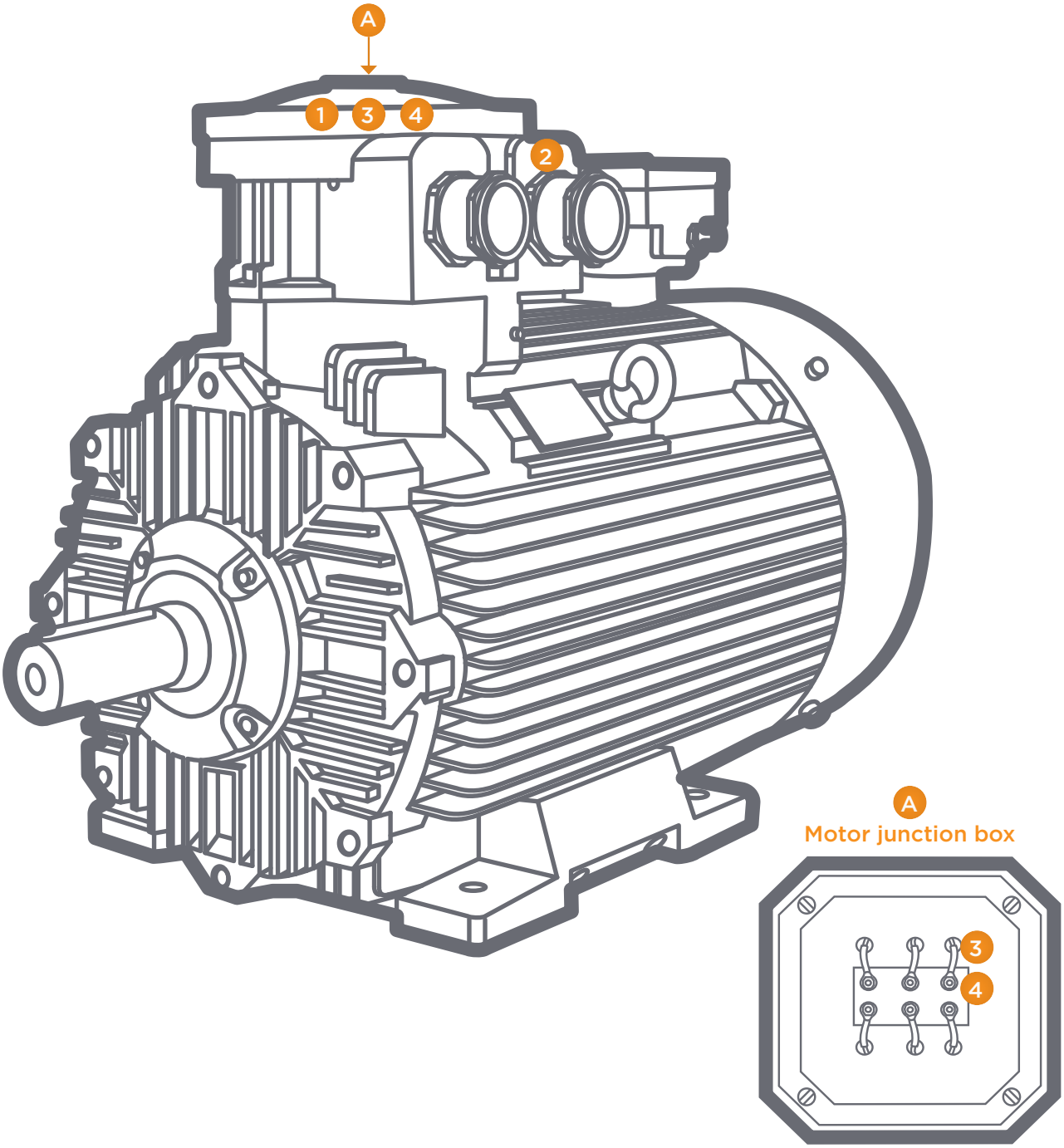


SMART CONVEYORS



AC MOTORS

AC Motors are often used in harsh environment that is why their frames are often made of rugged cast iron, aluminum or steel. AC motor components are subjected to following pollution: dust, vibration, abrasion and heat. Most of electrical components are located in the junction box where there is limited space.



1 **ENTRELEC Terminal blocks**

2 **Cable glands**

3 **Terminals and Splices**

4 **Identification and Labeling**

A **Motor junction box**

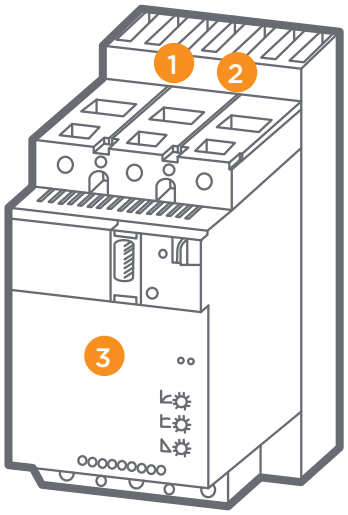
SOFT STARTERS
MOTOR CONTROL CENTERS

Soft starters are designed to control the acceleration of electric motors during startup. Unlike traditional direct-on-line starters, soft starters provide a gradual increase in voltage and current to the motor, ensuring a smooth and controlled start. Soft starters contribute to improved motor performance, extended equipment life, and enhanced overall system reliability.

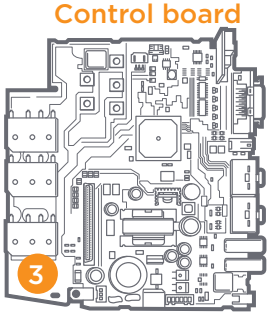
Motor Control Centers (MCCs) are centralizing the control and protection of numerous electric motors. MCCs cabinets are made of modular assemblies that house various motor control devices, such as contactors, circuit breakers, and starters, providing a unified and organized platform for motor management. MCCs simplify maintenance, troubleshooting, and enhance operational efficiency and safety.

TE supports this activity by providing a large scope of electrical component that helps ease various steps of manufacturing of those equipment from the design, assembly, connection, identification to operation and maintenance.

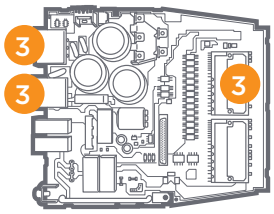
Soft starter



Control board

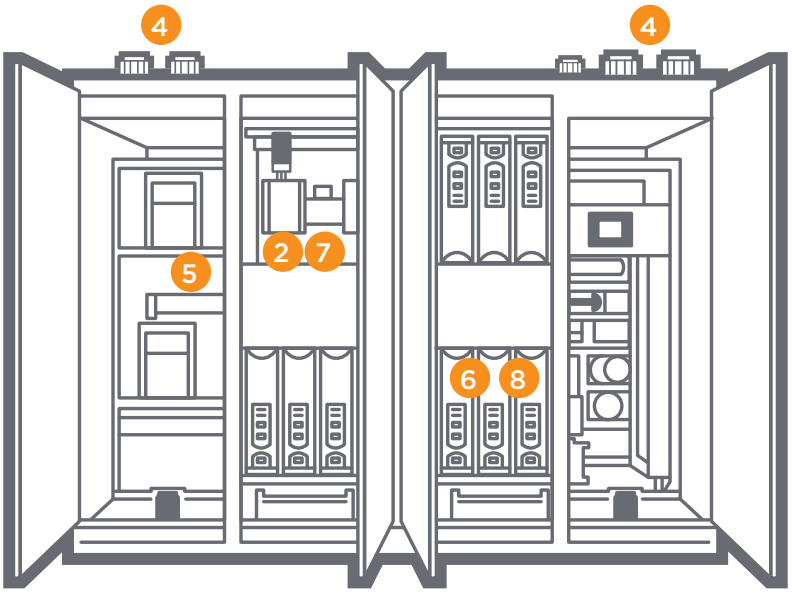


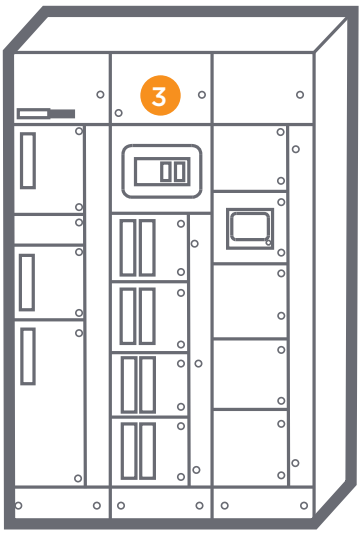
Power board



1. Ring terminal blocks
2. Wire identification: Printable continuous tubing
3. Equipment and PCB identification
4. Cable glands
5. Wiring duct
6. Terminals and splices
7. ENTRELEC Terminal blocks
8. Cable ties

Motor Control Center





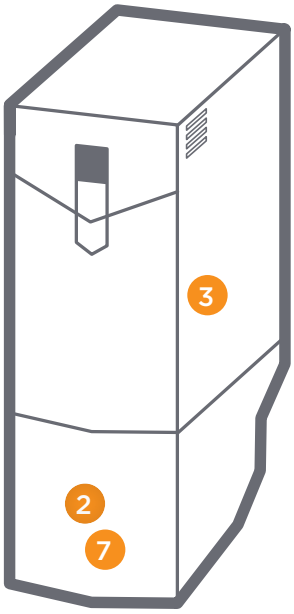
VARIABLE SPEED/FREQUENCY DRIVES

Variable speed drives, also known as variable frequency drives (VFDs) or inverters, enable precise control over the speed and torque of electric motors. Unlike fixed-speed setups, VSDs allow for adjustable motor speeds, enhancing energy efficiency and facilitating tailored performance for diverse applications. By varying the frequency and voltage supplied to the motor, VSDs offer flexibility, energy savings, and improved process control, making them significant in industries ranging from manufacturing to HVAC systems.

Range of VSDs can go from small size (few kW) to very high power range (Megawatts) for mining, petrochemical or large-scale manufacturing industries.

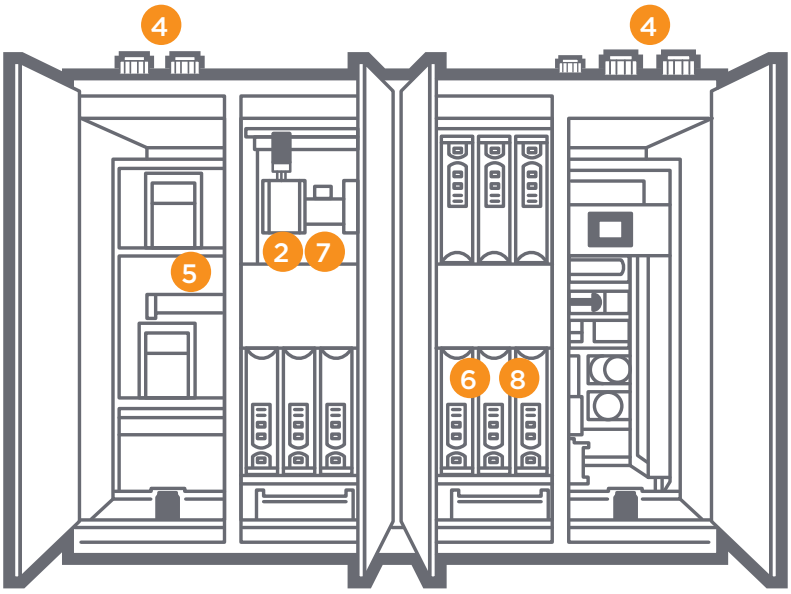
TE supports this activity by providing a wide range of electrical component that helps ease various steps of manufacturing of those equipment from the design, assembly, connection, identification to operation and maintenance.

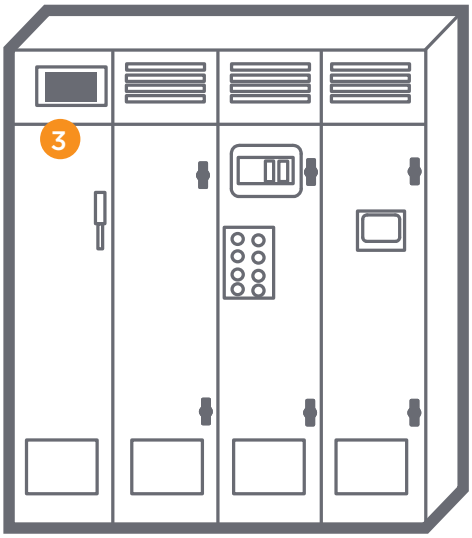
Medium size Variable speed drive



1. Ring terminal blocks
2. Wire identification: Printable continuous tubing
3. Equipment and PCB identification
4. Cable glands
5. Wiring duct
6. Terminals and splices
7. ENTRELEC Terminal blocks (control & power)
8. Cable ties

High power drive

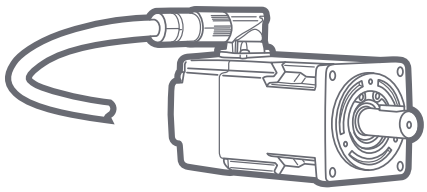


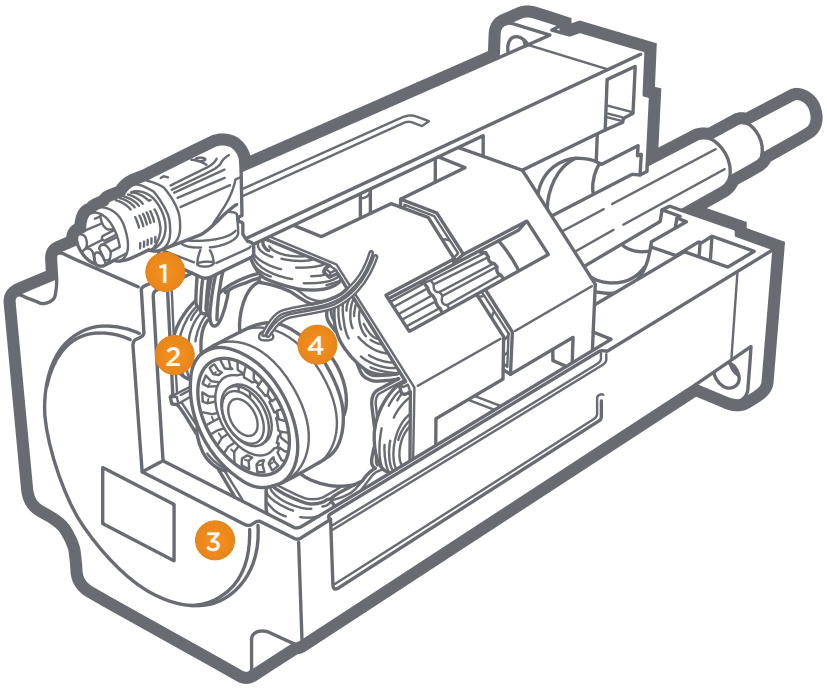


SERVO MOTORS

Technology advances in servo motors and drives are being applied to new opportunities in the production of sustainable goods like solar panels, wind turbines, lithium-ion batteries, and hydrogen fuel cells. And there is a clear trend away from traditional force transmission products like hydraulics and toward electrical solutions.

TE supports the identification and the wire management needs for servo motors application requiring reliability in confined space.





1. **Ring terminals**
2. **Wire identification**
3. **Equipement identification**
4. **Cable ties**

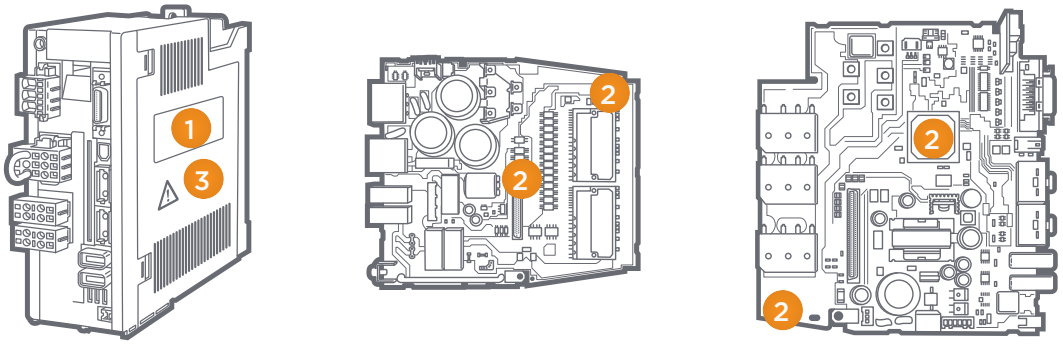
SERVO DRIVES

DECENTRALIZED SERVO DRIVES

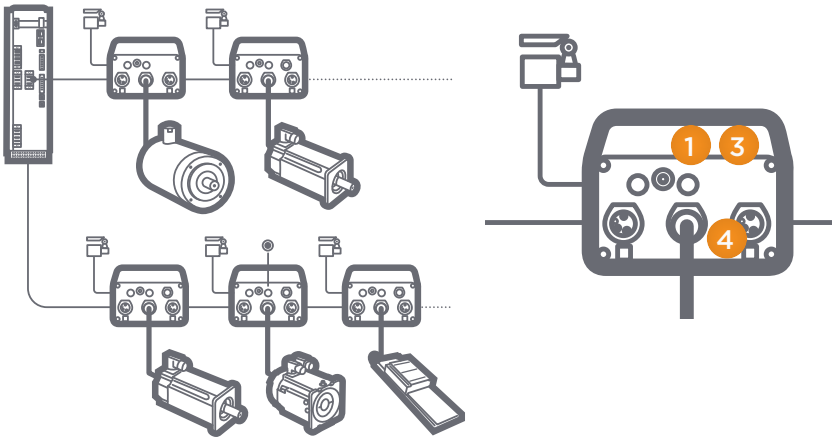
Technology advances in servo motors and drives are being applied to new opportunities in the production of sustainable goods like solar panels, wind turbines, lithium-ion batteries, and hydrogen fuel cells. And there is a clear trend away from traditional force transmission products like hydraulics and toward electrical solutions.

TE offers identification and wire management solutions to fit servo controllers and drives application in industrial environments.

SERVO DRIVE



DECENTRALIZED SERVO DRIVE

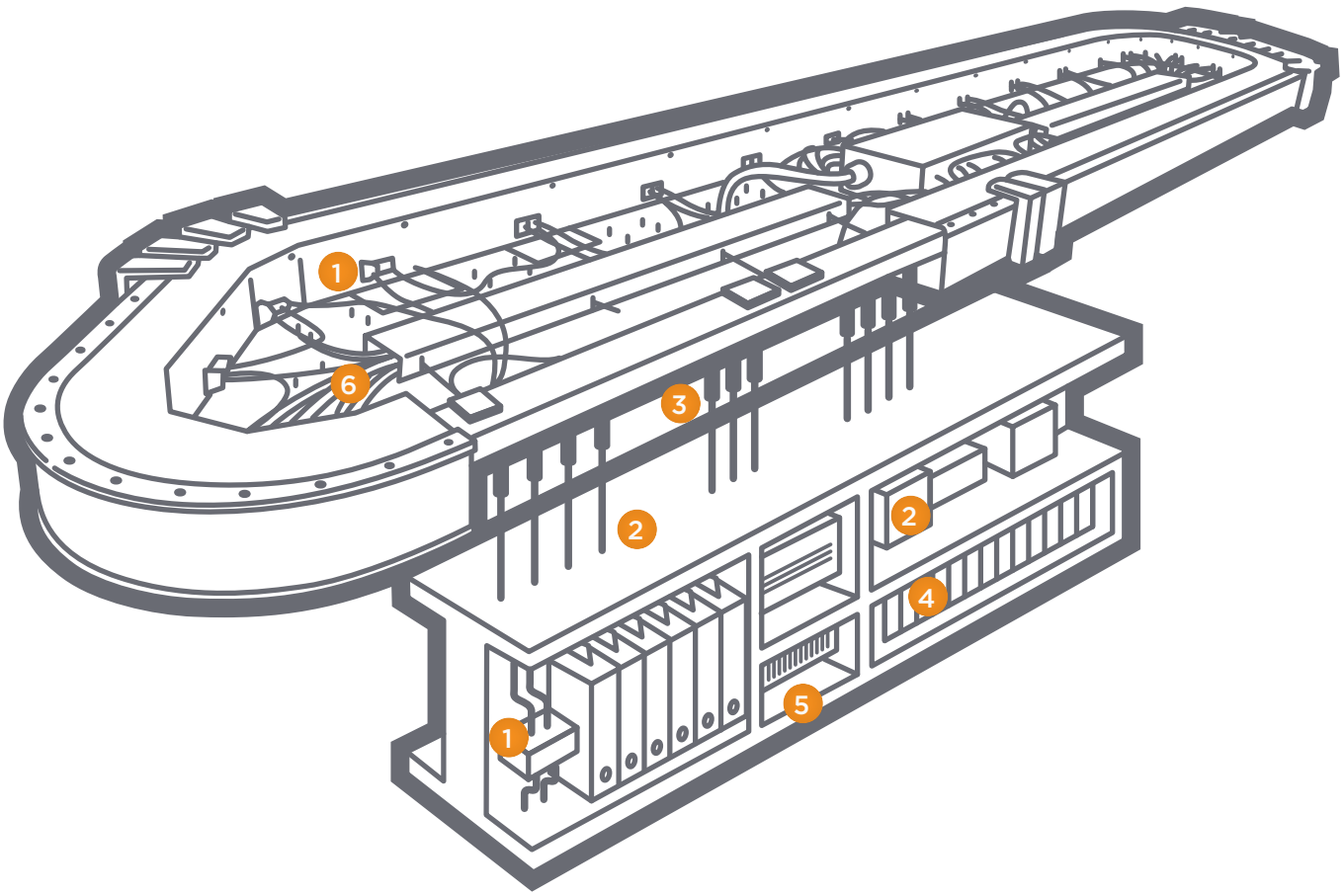


1. **Ring terminals**
2. **Wire identification**
3. **Equipement identification**
4. **Cable ties**

LINEAR CONVEYOR SYSTEMS

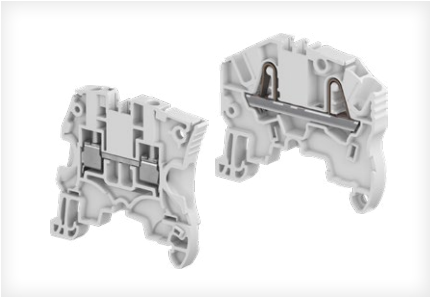
Increased demand for mass customization and personalization in consumer-packaged goods requires conveyors that are faster, smaller, and more flexible. This has led to innovative motion control technology for both linear and planar-based transport systems.

TE supports this activity by providing a large scope of electrical component that helps ease various steps of manufacturing of those equipment from the design, assembly, connection, identification to operation and maintenance.



1. Terminals and Splices
2. Wire and equipment identification
3. Cable glands
4. ENTRELEC Terminal blocks (control & power)
5. Wiring duct
6. Cable ties

ENTRELEC TERMINAL BLOCKS



The ENTRELEC terminal blocks offer one of the largest DIN rail terminal block offerings in the market with many technologies found in over 8000 products & solutions.

They allow efficient signal connection and distribution and devices protection into motion & drives sub-systems such as MCC's, drives and smart conveyors.

BENEFITS:

- Connection and mounting ergonomics thanks to the noteworthy SNK range available in PI-Spring (Push-In and Spring), screw clamp and pluggable technologies
- Common accessories to all technologies
- Qualified for worldwide applications and harsh environments.

TE featured products:
SNK Series:
- Screw-clamp terminal blocks
- PI-Spring terminal blocks
- Pluggable terminal blocks

DBL POWER DISTRIBUTION TERMINAL BLOCKS

Our noteworthy compact and modular power distribution blocks distribute or group single phase or three phase electrical circuits from a single input source to several devices in the branch circuit. Power distribution blocks are easy to install, save space, and allow increased productivity as well as flexibility of use into motion & drives systems.

BENEFITS:

- Three configurations in one product: single pole and multipole splitter, grouping
- From 80 A to 550 A adapted to power distribution needs in MCC's or power drives sub-systems
- Connect round or flat conductors and take up only 50% of the space of copper bars
- Reduce assembly time by up to 80%since no additional fastening or isolating components are needed.

TE featured products:
DBL power distribution blocks

COMPACT POWER BLOCKS

The ENTRELEC compact power blocks allow the connection of power cables at input or output of motion & drives sub-systems such as MCC's and drives. They combine high performance ratings (up to 300 mm^2, 520 A IEC) in a compact and light format.

BENEFITS:

- From 50 mm^2 to 300 mm^2 (10 AWG to 600 Kcmil UL), 150 A to 520 A (120 to 420A UL)
- Modularity, 2 connection versions for power connection and 4 connections versions for power distribution purposes
- Up to 6 colors for convenient phase identification purposes as per IEC/NEC wiring guidelines
- Compatible to AL/CU wire
- Two mounting option, Panel and DIN rail mounting
- Blocks from 95 mm^2 to 300 mm^2 have an extra built-in measurement tapping connection to provide main supply monitoring or to provide supply to a control equipment inside MCC or drive panels.

TE featured products:
Compact power blocks

CABLE TIES

TE's cable ties offer high strength, secure fastening, and ease of installation. They are available in various materials, including nylon and specialty polymers, providing for compatibility with different environmental conditions and application requirements.
With a focus on quality and performance, TE's cable ties provide a reliable solution for bundling and securing cables in a neat and organized manner.

BENEFITS:

- Bind even under extreme conditions
- High temperature & vibration withstand
- Tapered tip and bent tails for easy insertion
- Designed for indoor and outdoor applications

TE featured products:
Cable ties

CABLE GLANDS

Our cable glands are engineered to provide excellent strain relief for cables and high ingress protection against dirt, dust, water, and other liquids for electrical enclosures of motion & drives sub-systems such as motors, servo motors, MCC and drives cabinets that can be located in harsh environments.

BENEFITS:

- High ingress protection up to IP69
- 3 material choices: polyamide, brass, and stainless
- 3 thread types: metric, PG, and NPT
- Vast range of accessories, including washers, locknuts and various plugs to provide drainage, ventilation, or sealing.

TE featured products:
Cable Glands

WIRING DUCT

The WD wiring duct range includes popular profile widths such as 24, 40, 60, 80 100 and 120 mm. The high-quality PVC & Halogen free material allows the use in many applications such as standard industrial applications with PVC range to the most demanding applications such as railway, high buildings, marine and public buildings with the low smoke and Halogen free range. The specific design offers many solutions to enhance and help simplify the wiring.

BENEFITS:

- Helps save time while breaking off ribs without using any tools
- Additional hole on the side, allow the use of cable ties to group your cables in an efficient manner
- Quickly mount wire retainers on the bottom rail of the duct without screw and slide them along the rail
- Wiring duct covers hold securely even in a vertical position and under vibration.

TE featured products:
Wiring duct

WIRE IDENTIFICATION

The printable heat shrink tube allow durable marking in harsh environments. They are available in ladder or continuous format and resist to abrasion, solvent , high temperature. They suite well application in Motion & drives like AC motors, servo motors & drives.

BENEFITS:

- Self-extinguishing printable heat shrink tube available in a range of sizes and colors
- Ladder or continuous tubing
- Operating temperature range from -30°C to 105°C
- Available in supplied diameter from 2.4 mm to 38.1 mm
- High product and print resistance to industrial fluids and chemicals.

TE featured products:
Printable heat shrink

EQUIPMENT AND PANEL IDENTIFICATION

Our printable labels solutions allow equipment and panel identification. High temperature PCB labels allow direct wave and IR reflow PCB applications.
Temper evident labels are designed for serial number, calibration or rating plate information labels that requires protection against removal.

BENEFITS:

- Polyester labels for industrial surfaces and used to display product information or as rating plate.
- Hash environment labels and wire markers for durable marking
- Panel labels resist exposure to industrial fluids, solvents and abrasion from frequent handling
- High temperature labels suitable for direct wave (bottom side) and IR reflow (top side) PCB applications. Designed to resist fluxes, cleaning solvents and molten solder
- Printable metalized polyester (MP) or polyethylene (TN) labels with strong acrylic adhesive are Designed for serial number, calibration or rating plate information labels that requires protection against removal.

TE featured products:
Labels

EQUIPMENT IDENTIFICATION

Pre-printed safety and warning labels are made with a pressure sensitive adhesive, suitable for labeling equipments such as AC motors, motion drives and controllers.

BENEFITS:

- Laminated, soft vinyl, gloss yellow sign
- Yellow signal color with excellent contrast
- Pre-printed sign comes in various sizes
- Comes in various different warning signs.

TE featured products:
Safety labels

TERMINALS AND SPLICES
PIDG NYLON TERMINALS

PIDG terminals and splices are designed to offer high and uniform reliability in the most difficult circuit environments. They consist of a nylon or PVC insulated copper body, plus a copper sleeve that crimps to the wire insulation for added support. This advanced premium design is vibration resistant and allows the wire to bend in any direction reducing risks of damaging the wire insulation or conductor. Adapted for use in motors' junction boxes.

BENEFITS:

- From 0.12 mm^2 to 6 mm^2 - 26 AWG to 10 AWG
- Color coded insulation
- Ring tongue, spades, wire pins, splices, disconnect
- High mechanical resistance: wire can be bent into any direction helping reduce the connection fail risks
- High resistance to harsh environment and vibrations. Insulation repels hydrocarbons (greases, oils, etc.) and has high dielectric strength.
- Serrations in wire barrel give high electrical contact and tensile strength with the conductor.

TE featured products:
PIDG terminals

TERMINALS AND SPLICES
PLASTI-GRIP VINYL TERMINALS

PLASTI-GRIP terminals are pre-insulated terminals and splices specifically designed to answer the need for inexpensive insulated electrical terminations. They consist of a high conductivity copper body and color coded PVC insulation that can be used in almost all commercial applications. The wire and terminal barrel provide a connection of high conductivity, tensile strength, and high resistance to corrosion.

BENEFITS:

- From 0.12 mm^2 to 76 mm^2 - 26 AWG to 2/0 AWG
- PVC insulation provides good dielectric strength and supports the wire insulation so that no bare wire is exposed tin plating
- Funneled wire entry on terminal prevents turned back wire strands and permits rapid wire insertion during high speed production
- Serrations in the crimp barrel provide reliable contact and tensile strength after crimping.

TE featured products:
PLASTI-GRIP terminals

MARKETING SPOTLIGHT

"TE is a key supplier of electrical components for motion and drives applications. Our broad portfolio of connections, identifications, and wire management solutions helps in designing more efficient motion & drives systems."

— Thomas Bartlett,
Global product manager
TE Connectivity

Connect With Us

We make it easy to connect with our experts and are ready to provide all the support you need.
Visit **te.com/support** to chat with a Product Information Specialist.

te.com

MOTION & DRIVES / ELECTRICAL PRODUCTS GUIDE 07-24

TE Connectivity

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