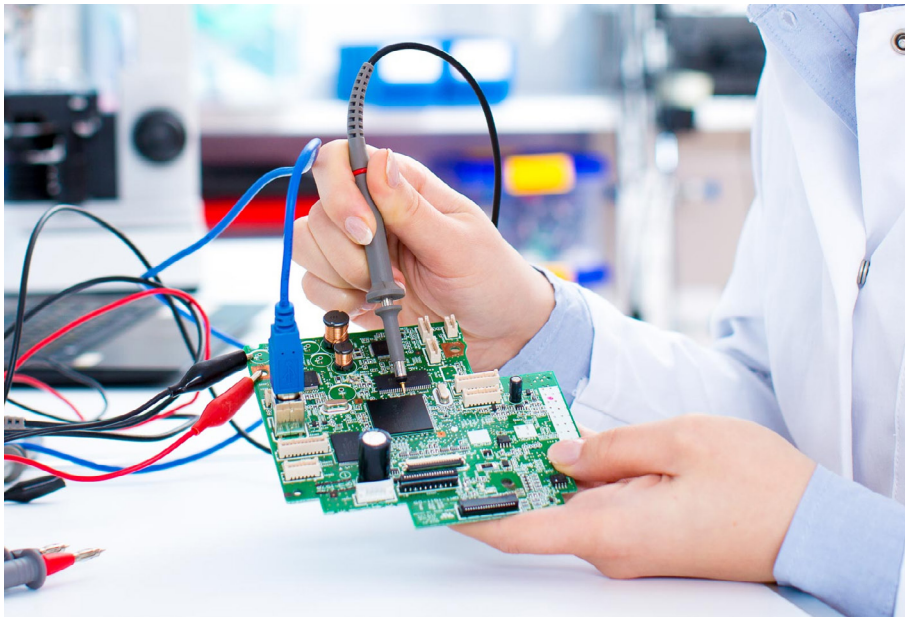
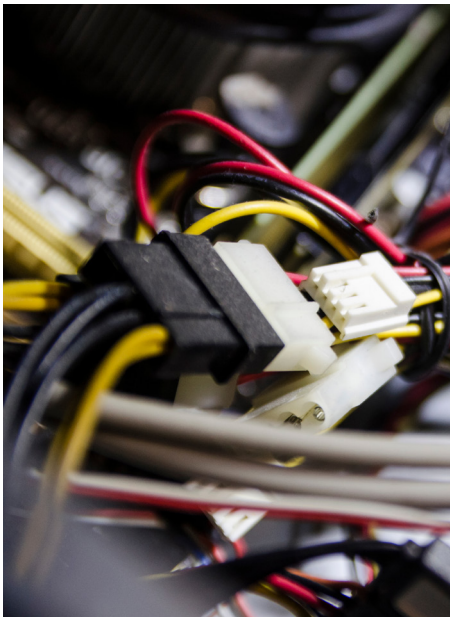
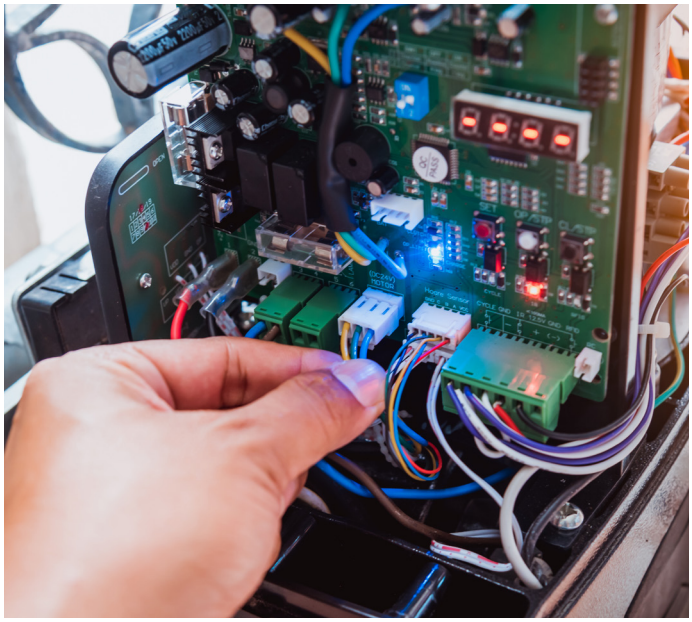






ERGONOMIC CONNECTIONS PRODUCT SOLUTION GUIDE

TE Connectivity's (TE) ergonomic design innovations are helping manufacturers across a variety of industries take a more holistic approach to assembly line worker safety, while also improving their manufacturing efficiency. Our portfolio of ergonomic signal connectors, power connectors, receptacle terminals, and terminal housings are designed to address some of the most pressing manufacturing challenges, including operator injuries, process inefficiencies, and systemic product quality issues.

Explore this product solution guide to understand how our products address these challenges and to find the right ergonomic solution for your application.

ERGONOMIC CONNECTOR SOLUTIONS FOR COMMON MANUFACTURING CHALLENGES

CHALLENGES	SOLUTIONS
Operator Injury and Fatigue: Repetitive difficult assembly motions, including high force or pinch grip steps may lead to lost work hours or muscular skeletal disorders (MSDs).	 Reduce terminal insertion force or connector mating force  Include larger handling surfaces to replace pinch grip mating with easier thumb or palm press  Housing materials with rounded edges to help reduce risk of skin damage
High Process Cycle Time: Production fails to meet target takt time due to difficult, unclear, or too many assembly steps.	 Reduce terminal insertion force or connector mating force  Use multi-position connectors to replace many single position mating steps  Use pre-insulated terminals to skip terminal insertion steps  Simplify assembly steps with error-resistant (poka-yoke) features like color coding, keying, polarization, and mating confirmation
Partially Mated Connections: Fatigued operators are unable to lock terminals or housings into place, resulting in finished product quality issues.	 Include audible, tactile, or visual mating confirmation to help ensure complete mating  Use terminal position assurance (TPA) devices to help ensure terminals are fully seated and cannot backout  Reduce terminal insertion force or connector mating force
Mis-mated Connections: Systems with multiple similar connections or connections with multiple possible orientations fail quality checks due to incorrectly assembled components.	 Simplify assembly steps with error-resistant (poka-yoke) features like color coding, keying, and polarization  Use multi-position connectors to replace many single position mating steps
Components Damaged During Assembly: Components featuring exposed latches or pins are damaged from wire entanglement or contact stubbing	 Design cavities with lead-in or blind mate features to help prevent contact stubbing  Use lance-less terminals and connectors with anti-snag latches to help prevent wire entanglement damage

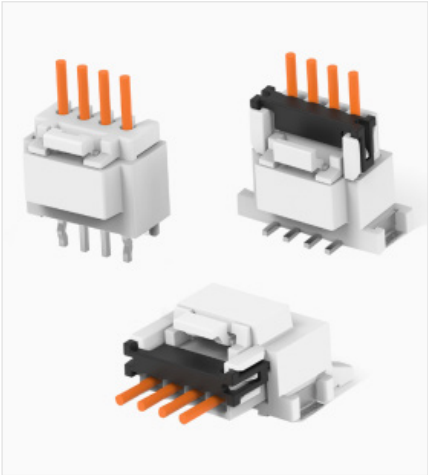
PRODUCT OFFERINGS

This product guide features ergonomic connectivity solutions that cover a range of application requirements, including high power systems, high operating temperatures, and harsh environments. Specifically, you will learn more about these ergonomic products:

SIGNAL CONNECTORS	POWER CONNECTORS	RECEPTACLE TERMINALS	TERMINAL HOUSINGS
• Signal GRACE INERTIA Connectors • Economy Power 2.5 Connectors	• Power Key Connectors • Power Versa-Lock Connectors • POWER TRIPLE LOCK Connectors	• Positive Lock Mark II and X-LIF Terminals • Standard FASTON Terminals • Ultra-Fast Pre-Insulated Terminals • Ultra-Pod Pre-Insulated Terminals	• T9A Relay Housings • Infinite Switch Housings • Radiant Burner Housings

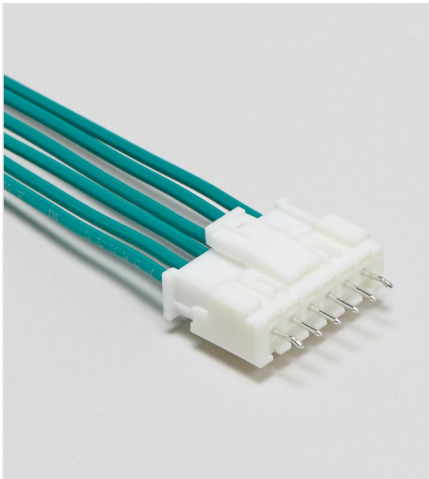
CONNECTORS

Signal Connectors



2.0MM SIGNAL GRACE INERTIA CONNECTORS

Product Specifications	Ergonomic Features
• Pitch: 2.0mm • Current Rating: 2.5A • Voltage Rating: 50V • Flammability Rating: UL 94 V-0 • Wire Size: 28-18AWG • Positions: 2-20 • Wire-to-board	• Inertia locking mechanism • Color, keying, and polarization • Audible mating confirmation • Lead-in mating features • Anti-snag latch • Easy-grip rounded edges



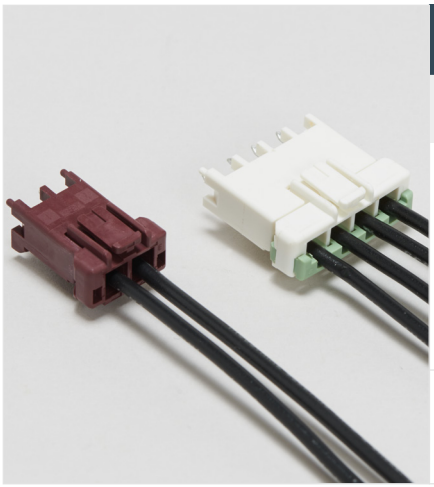
ECONOMY POWER 2.5 CONNECTORS

Product Specifications	Ergonomic Features
• Pitch: 2.5mm • Current Rating: 4.2A • Voltage Rating: 250V • Flammability Rating: UL 94 V-0, IEC 60335-1 GWT* • Wire Size: 26-20AWG • Positions: 2-40 • Wire-to-wire, wire-to-board	• Low mating force • Polarized terminals • Multiple color options • Audible and visual mating confirmation • Lead-in mating features • Easy-grip terminal position assurance (TPA)

* GWT refers to glow wire testing. For more information on glow wire testing please review the white paper **Glow Wire Testing for the Appliance Industry** or visit the **Glow Wire Capable Connectors product page**.

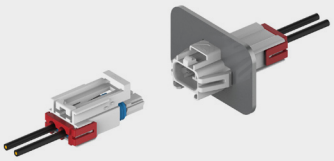
CONNECTORS

Power Connectors



POWER KEY CONNECTORS

Product Specifications	Ergonomic Features
• Pitch: 5mm • Current Rating: 10A • Voltage Rating: 300V • Flammability Rating: UL 94 V-0, IEC 60335-1 GWT* • Wire Size: 24-16AWG • Positions: 2-4,6 • Wire-to-board	• Audible and visual mating confirmation • Anti-snag latch • Keying and polarization • Lead-in mating features • Easy handling features on housings and terminal position assurance (TPA)



POWER VERSA-LOCK CONNECTORS

Product Specifications	Ergonomic Features
• Pitch: 5mm • Current Rating: 15A • Voltage Rating: 600V • Flammability Rating: UL 94 V-0, IEC 60335-1 GWT* • Wire Size: 26-14AWG • Positions: 1-4,6,9 • Wire-to-wire, wire-to-panel	• Color, keying, and polarization • Audible and visual mating confirmation • Easy handling features on housings and terminal position assurance (TPA) • Lead-in mating features • Anti-snag latch with easy-press thumb pad

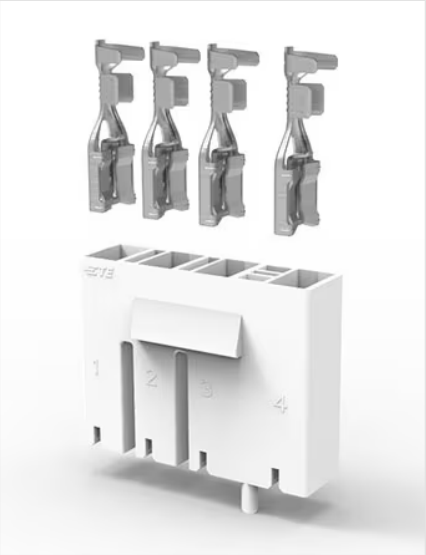
POWER TRIPLE LOCK CONNECTORS

Product Specifications	Ergonomic Features
• Pitch: 6mm • Current Rating: 20A • Voltage Rating: 600V • Flammability Rating: UL 94 V-0, IEC 60335-1 GWT* • Wire Size: 20-12AWG • Positions: 2-15 • Wire-to-wire, wire-to-board, wire-to-panel	• Low mating force • Color, keying, and polarization • Audible and visual mating confirmation • Easy handling features on housings, terminal position assurance (TPA), and connector position assurance (CPA) • Anti-snag latch with easy-press thumb pad

* GWT refers to glow wire testing. For more information on glow wire testing please review the white paper **Glow Wire Testing for the Appliance Industry** or visit the **Glow Wire Capable Connectors product page**.

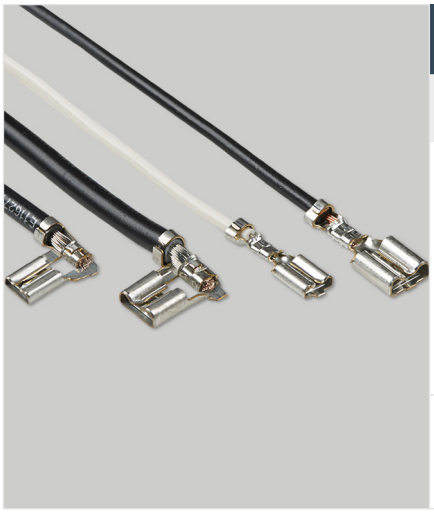
TERMINALS & SPLICES

Receptacles



POSITIVE LOCK MARK II AND X-LIF TERMINALS

Product Specifications	Key Ergonomic Features
• Tab Width (in.): .187, .250 • Tab Thickness (in.): .020, .032 • Wire Size: 24-10AWG • Max Current: 24A • Agency Approvals: UL, VDE, CSA	• Low insertion force (LIF) with high locked retention force • Unlocking feature allows easy tab separation • Poka-yoke with multi-position housings designed to application specific components • Audible and tactile mating confirmation • Polarized terminal insertion in housing



STANDARD FASTON TERMINALS

Product Specifications	Key Ergonomic Features
• Tab Width (in.): .187, .250 • Tab Thickness (in.): .020, .032 • Wire Size: 24-12AWG • Max Current: 20A • Agency Approvals: UL, VDE, CSA	• Low insertion force (LIF) with high retention force • Poka-yoke with multi-position housings designed to application specific components • Tactile mating confirmation • Polarized terminal insertion in housing • Lead-in mating features

ULTRA-FAST PRE-INSULATED TERMINALS

Product Specifications	Key Ergonomic Features
• Tab Width (in.): .110, .125, .187, .205, .250 • Tab Thickness (in.): .016-.032 • Wire Size: 26-10AWG • Max Current: 24A • Agency Approvals: UL, CSA	• Pre-assembled terminal in housing • Hourglass shape offers easy-grip assembly • Color coded insulation by wire size range • Multiple orientations available • User-friendly flexible insulation

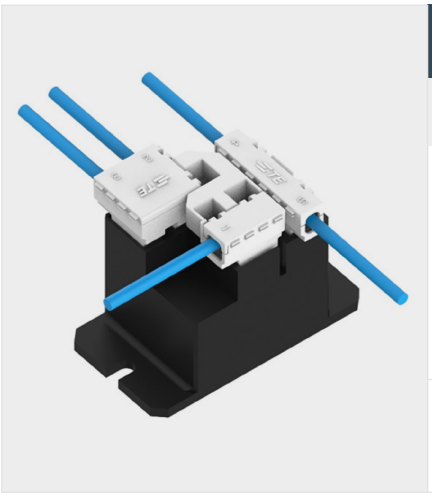
TERMINALS & SPLICES

Receptacles

ULTRA-POD PRE-INSULATED TERMINALS

Product Specifications	Key Ergonomic Features
• Tab Width (in.): .110, .187, .250 • Tab Thickness (in.): .020, .032 • Wire Size: 22-10AWG • Max Current: 24A • Agency Approvals: UL, CSA	• Available with low insertion force (LIF) • Applicator inserted terminal in housing • Multiple orientations available • Lead-in mating features • Easy-grip terminal housing

Housings



T9A RELAY HOUSINGS WITH FASTON TERMINALS

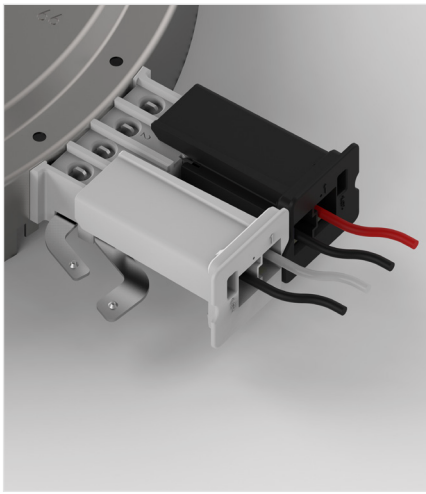
Product Specifications	Key Ergonomic Features
• Tab Width (in.): .250 • Tab Thickness (in.): .032 • Wire Size: 20-14AWG • Max Voltage: 250V • Agency Approvals: UL	• Compatible with FASTON and Positive Lock low insertion force (LIF) terminals • Easy handling features and large push surfaces • Lead-in mating features • Multi-position housing

INFINITE SWITCH HOUSINGS

Product Specifications	Key Ergonomic Features
• Tab Width (in.): .187, .250 • Tab Thickness (in.): .032 • Wire Size: 22-10AWG • Max Voltage: 250V • Agency Approvals: UL, CSA	• Compatible with FASTON and Positive Lock low insertion force (LIF) terminals • Easy handling features and large push surfaces • Lead-in mating features • Multi-position housing

TERMINALS & SPLICES

Housings



RADIANT BURNER HOUSINGS	
Product Specifications	**Key Ergonomic Features**
• Tab Width (in.): .250 • Tab Thickness (in.): .032 • Wire Size: 22-10AWG • Max Voltage: 600V • Max Operating Temp: 240°C • Agency Approvals: UL	• Easy handling features and large push surfaces • Compatible with high temperature Positive Lock low insertion force (LIF) terminals • Lead-in mating features • Multi-position housing • Color and polarization

FIND YOUR ERGONOMIC SOLUTION WITH TE CONNECTIVITY

TE Connectivity is committed to providing ergonomic solutions to our manufacturing partners. We understand how connector design impacts safe and efficient assembly, across a broad range of industries and manufacturing environments, and are ready deliver an ergonomic product that meets your application requirements.

Contact our team to learn how TE's portfolio of low insertion force (LIF), easy handling and error-resistant products can help improve your assembly process.

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

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