



Electrical Solutions
for
System Integrators
and **Panel Builders**

Thomas & Betts. Your best connection for innovative solutions.

Thomas & Betts
A Member of the ABB Group

In Canada, tens of thousands of facilities use electrical power control panels to keep manufacturing processes as well as environmental and other critical systems working reliably and safely with optimal performance.



Challenge and commitment

Today's system integrators and panel builders must remain competitive and profitable while facing:

- Reduced or tight budgets
- Fluctuating raw material costs
- Increased competition
- Changing technology and global standards

Electrical control panels are an essential part of manufacturing. They are critical in making sure the right amount of electrical power is sent to the right equipment at the right time to ensure the manufacturing process is able to be performed consistently over and over again.

Electrical control panels are used to control water pumping stations to irrigate farms, to keep our nation's food supply healthy and to keep parks and golf courses saturated with the right amount of water so you can enjoy an outdoor activity.

Electrical control panels are used in commercial building HVAC and lighting systems to ensure workers are comfortable and effective while at work. They are used nearly everywhere power is used, from industrial and commercial markets to institutional and residential markets.

System integrators and panel builders are increasingly being challenged to design a variety of panel types for different environments (approximately 80 percent of panels are unique) and to build and install their electrical control panels on time, at a

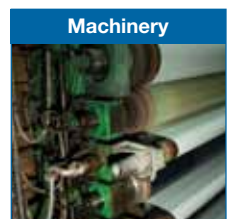
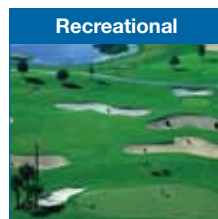
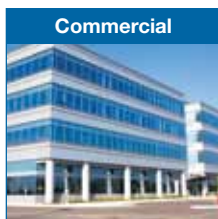
competitive cost and with a high degree of reliability. Their panel boards are often required to operate 24/7 without interruption and in harsh environments.

The critical need for continuous clean power without downtime is key to many manufacturing processes as well as health care. The losses from power failure in an industrial plant can be huge; the loss of power in a hospital can threaten life itself.

Thomas & Betts understands system integrators' and panel builders' electrical system issues and has solutions that will help them to:

- Increase personnel and equipment safety
- Improve revenues and profitability
- Ensure high-performance, high-quality and high-reliability electrical systems with extended life
- Reduce labour and installation costs while increasing productivity
- Build and install safer equipment with flexible design options
- Save space in their panels
- Keep up to date with new technologies and global standards
- Meet their customers' specifications and exceed their expectations
- Maintain high brand value and company reputation in order to gain market share

Panel Board Applications



Delivering value through system solutions based on engineering innovation

Our Value Commitment

System integrators and panel builders must meet demanding delivery schedules while maintaining quality and safety. Key business drivers are building high-performance, reliable and safe electrical panel boards, improving operational efficiencies while maintaining high quality, and completing jobs on time, within budget. Thomas & Betts is committed to helping you meet the unique challenges encountered in system integration and panel building by offering electrical solutions, systems and services that deliver value. These include:

T&B Engineered solutions — Our products are designed to perform dependably under conditions such as constant moisture, harsh chemicals, extreme temperatures, high-pressure hosedown, ultraviolet exposure, hazardous areas, high-vibration equipment and continuous operation.

Tested reliability — Our products are rigorously tested for use in harsh environments, with proven results in thousands of installations.

Expert support — Thomas & Betts trained sales representatives and technical services experts are available at every stage of a project, from planning and site preparation through construction and MRO.

Training and certification — Thomas & Betts conducts training programs on specific products and systems and works closely with accredited electrical industry associations. Contact us for details.

Product availability — Our industry-leading distributor network assures you of reliable and on-time delivery. This global electrical product support system ensures that our solutions are available when and where you need them.

Product Platforms

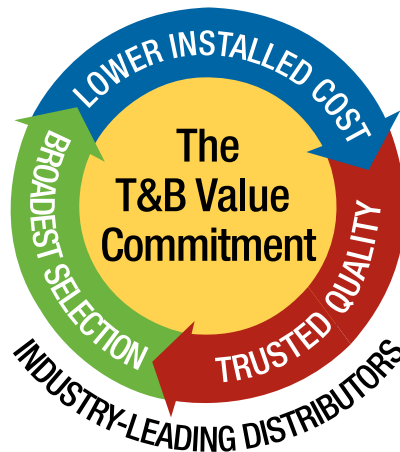
Thomas & Betts provides electrical packages that maximize plant availability and optimize lifecycle operation and maintenance costs. These solutions ensure the safety of personnel and machinery and preserve the quality of your power supply and electrical installation.

Wire and Cable Management — Thomas & Betts invented the Ty-Rap® cable tie in 1958 and continues to lead the world in innovative wire and cable management. OEMs, panel builders, contractors and maintenance personnel depend on Thomas & Betts electrical boxes, cable ties, weatherproof enclosures, cable tray and modular metal framing to do the job right and help reduce installation time and costs.

Cable Protection Systems — Thomas & Betts Cable Protection Systems provide unsurpassed protection for wire and cables in the most demanding applications. They encompass industry-leading flexible conduit systems, PVC-coated conduit and fittings recognized as the standard in many applications across the globe and explosion-proof conduit systems meeting worldwide standards for hazardous locations.

Power Connection and Control — For reliable connection and intelligent control of electrical power, Thomas & Betts mechanical and compression connectors, grounding products, medium-voltage cable accessories, high-voltage fuses, vacuum interrupters, reclosers and capacitor switches are specified worldwide in the industrial, construction and utility markets.

Safety Technology — Protecting lives and property requires state-of-the-art technology. Thomas & Betts is a worldwide leader in emergency lighting and supporting central battery systems, and lighting for hazardous locations. Our Safety Technology extends the life of your electrical system and protects your employees and assets.





***Key Business Drivers
for System Integrators
and Panel Builders***

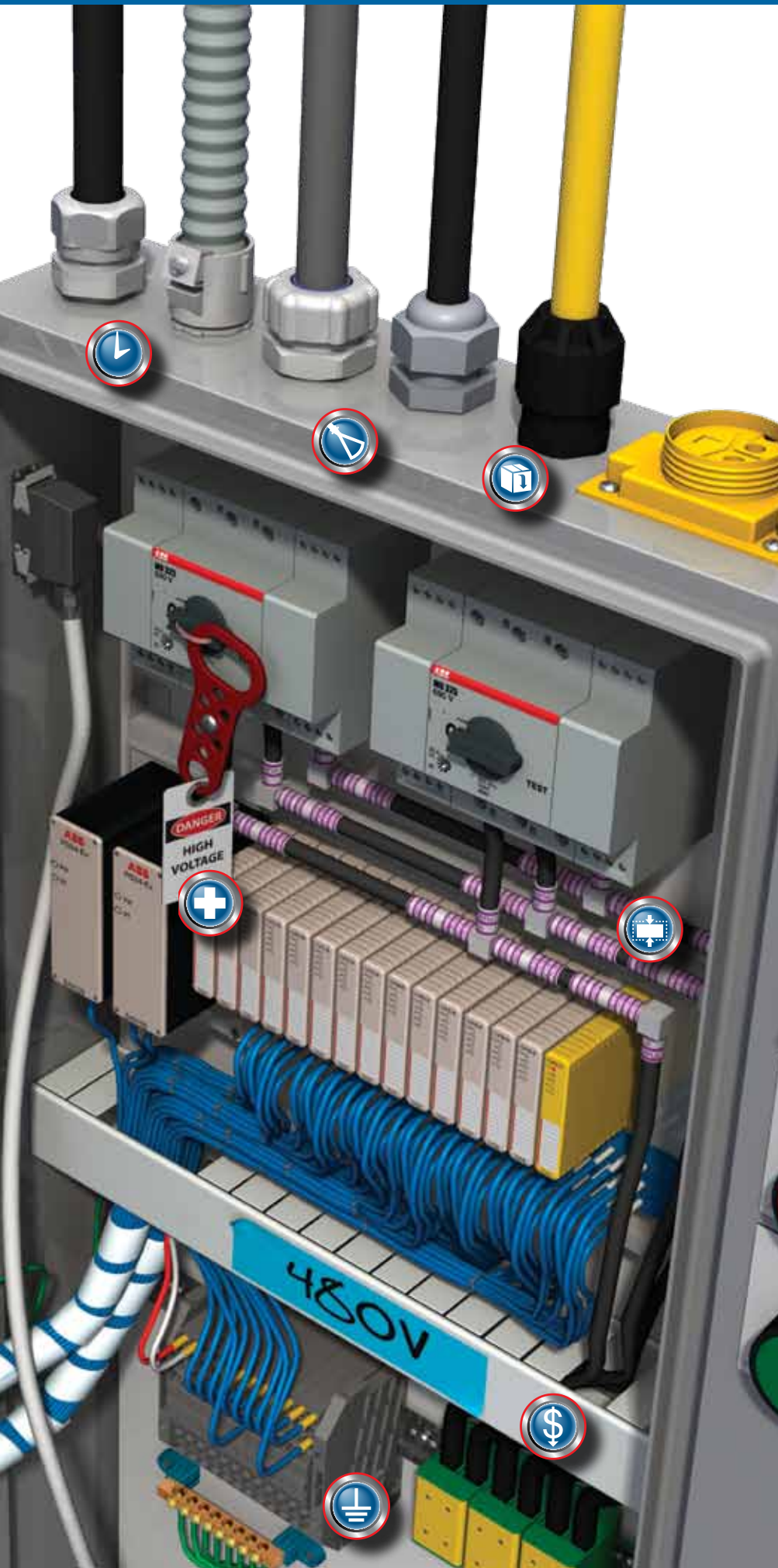
- ***Build high-performance,
reliable and safe
electrical panel boards***
- ***Improve operational
efficiencies and
revenues while
maintaining high quality***
- ***Complete jobs on time
and to specifications***

T&B Engineered solutions for every panel

- **Low, Medium and High-Voltage Control Panels**
- **Industrial Control Panels**
- **Fire and Alarm System Protection Panels**
- **HVAC Panels**
- **Lighting Panels**
- **Telephone Panels**
- **Pumping System Panels**
- **Operator Interface Panels**

Thomas & Betts understands the everyday challenges you face in the panel-building market. We're focused on providing you with electrical solutions that address the critical issues in your operation, enabling you to focus on your product's design, performance, quality, reliability, cost and customer installation schedule. Our family of electrical solutions matches specific application criteria from start to finish both inside and outside your electrical control panel, ensuring the quality, reliability and profitability of your project. And with the industry's most efficient distribution system, we're prepared to meet your ongoing electrical components needs now and into the future.





Electrical System Issues for System Integrators and Panel Builders

 ***Continuous Operation
& Sustainability***

 ***Safety***

 ***Total Project
Cost Reduction***

 ***SKU Reduction***

 ***Space Savings***

 ***Liquid Ingress
Protection***

 ***Grounding, Bonding
& EMC Protection***



Continuous Operation & Sustainability

System integrators and panel builders are under pressure to create high-reliability panels with technical features that solve complex processing problems. Panels must be produced quickly, able to run continuously in a variety of environments with high performance and at a lower-installed cost. Loose connections are a serious issue. Thomas & Betts offers high-quality electrical system solutions for consistent, reliable connections to maintain your brand reputation. Our products comply with industry standards, which helps your Factory Acceptance Testing (FAT) go smoothly and eliminates rework. In addition, we offer components designed to provide long, reliable service in harsh, wet, corrosive and extreme-temperature environments. To minimize downtime, we offer the following solutions:

- Long-lasting electrical systems to extend lifecycle, reduce expenditures and increase Overall Equipment Effectiveness (OEE)
- High-performance electrical systems to increase reliability

Sta-Kon®

Crimped Wire Termination Systems

- Complete line of rings, forks, splices, disconnects, pin terminals and wire ferrules, built with materials for high-performance applications
- Longer, selectively annealed barrel for increased pull-out strength and lowered crimping force, with funneled terminal barrel entry for faster installation
- Nylon terminals feature metal insulation grip sleeve for strain-relief
- All Sta-Kon® terminals are CSA Certified and UL Listed

Shrink-Kon™

Heat-shrinkable Insulation

- Provides superior conductor, connection and termination protection, thus helping to ensure reliable, continuous operations



T&B® Fittings

Liquidtight Nonmetallic, Steel and Stainless Steel Fittings

- For all types of conduit, portable cord and teck cable

Liquatite™ Flexible Metallic and Nonmetallic Conduit

- Ideal for continuous flexing or vibration applications
- Create a liquid-, dust- and oil-tight seal
- Suitable for operating temperatures from -20°C to 60°C

Carlton®

Nonmetallic Enclosures

- NEMA and JIC designs
- Lightweight, impact-resistant, nonmetallic material withstands harsh, wet and corrosive environments

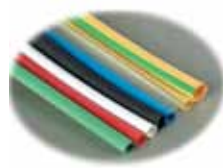
Blackburn®

Motor Lead Disconnects

- Quick and reliable change-out of electric motors with no bolting, taping or loose connections
- Available for wire sizes up to 500 kcmil
- Featuring the Color-Keyed® Compression System that ensures proper connections



Sta-Kon®
Crimped Wire Termination Systems



Shrink-Kon™
Heat-shrinkable Insulation



T&B® Fittings
Liquatite™ Flexible Metallic and Nonmetallic Conduit



Carlton®
Nonmetallic Enclosures



Blackburn®
Motor Lead Disconnects



What is the cost of down-time for your company?

In what environments are your panels located?

Panel boards are found in both indoor and outdoor applications, exposed to various environmental conditions, such as high and low temperatures, ultraviolet light, rain, snow, liquids, chemicals and corrosive agents.

Thomas & Betts products for continuous operation & sustainability

Blackburn®

- Compression Connectors featuring the Color-Keyed® Installation Tooling System
- Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- KUBE™ Flag, Tee and Cross Connectors
- Battery-Powered and Hydraulic Compression Tools

Boreal™

- Flexible Braids

Carlton®

- Nonmetallic Enclosures

Iberville®

- Device Boxes and Covers

Ocal™

- Corrosion-Resistant PVC-Coated Conduit and Fittings

PMA®

- Flexible Nylon Cable Protection Systems

Russellstoll®

- DuraGard® Industrial Interconnect System — Plugs, Receptacles and Connectors
- IEC 309 Rated Pin-and-Sleeve Plugs, Connectors and Receptacles

Shrink-Kon™

- Heat-Shrinkable Wire Protection Insulation
- Self-Fusing Insulation Tape

Sta-Kon®

- Crimped Wire Termination Systems — Rings, Forks, Splices, Disconnects and Wire Joints
- Insulated and Non-Insulated Ferrules and Pin Terminals

Superstrut®

- 316 Stainless Steel, Aluminum or Nonmetallic Channels
- Hangers and Clamps
- Seismic Bracing System

T&B® Fittings

- Steel, Stainless Steel, Aluminum and Nonmetallic Liquidtight Conduit and Cord Fittings
- Silver Grip® Tray Cord Fittings
- Wire-Mesh Strain-Relief Cord and Conduit Grips
- BlueKote™ and Stainless Steel LU™ Conduit Bodies
- STAR TECK® and STAR TECK XP® Fittings for Jacketed Metal-Clad and Teck Cables
- Liqueatite™ Flexible Metallic and Nonmetallic Conduit

Ty-Duct™

- Nonmetallic Wiring Duct
- Bench-Mount Cutter
- Tools and Accessories

Ty-Rap®

- Abrasion-Protection Sleeving
- Cable Ties and Fastening Accessories
- Spiral Wrap Harnessing

Canadian Centre for Occupational Health and Safety (CCOHS) governs worker safety. Safety issues for system integrators and panel builders encompass both the well being of personnel building the panels and protection of the employees and assets of customers who use the panels. Many new safety products are being designed into panels to identify and monitor critical processes, make them “touch safe” with arc flash protection, indicator lights, safety relays, touch screens, viewing windows, door ports, deadfront barriers and interlocked safety switches that offer emergency stop circuitry for added protection. For the safety of your employees, Thomas & Betts offers a variety of ergonomic manual, battery-powered and pneumatic/hydraulic installation tools for terminals, lugs and cable ties, providing consistency, efficiency and comfort and helping to reduce the risk of injury. We also provide safety products to help protect your customers’ employees while working in your panel. Thomas & Betts solutions help you increase safety to protect:

- Your panel technicians
- Your equipment
- Your customers

Blackburn® | Sta-Kon® | Ty-Rap®

Ergonomic Application Tooling

- Consistent installation of lugs, terminals and cable ties
- Save time and increase reliability and profitability with hydraulic and pneumatic tooling
- Reduced handle force and ergonomic design lowers the risk of repetitive motion injuries
- Promotes safety by properly matching the correct tool with the electrical component it’s designed to install

Ty-Duct™

Wiring Duct

- Halogen-free material available to provide added safety in case of fire
- Available in solid, wide slot, narrow slot and round hole versions to meet your capacity and flexibility needs
- Interlocking cover with protective peel-off film
- Wide range of sizes and colours



E-Z-CODE®

Marking Systems

- Terminal block labels
- Cable markers
- Heat-shrinkable markers
- High speed printers

PMA®

Halogen-Free Nylon Liquidtight Conduit Systems

- Free of halogen and cadmium — will not expose workers to hazardous smoke fumes
- Nonmetallic fittings with metallic and nonmetallic threads providing IP66, IP68 and IP69K ingress protection

Ty-Rap®

Detectable Nylon Cable Ties and Mounting Accessories

- Detectable by X-ray equipment and by metal detectors set as low as 1.5 mm ferrous sphere setting
- Bright blue colour allows easy visual detection, especially on white conveyor systems
- Buoyant polypropylene version available for liquid-processing applications



Blackburn® | Sta-Kon® | Ty-Rap®
Ergonomic
Application Tooling

Ty-Duct™
Wiring Duct

E-Z-CODE®
Marking
Systems

PMA®
Halogen-Free Nylon
Liquidtight Conduit
Systems

Ty-Rap®
Detectable Cable Ties
and Accessories



Thomas & Betts products for safety

Blackburn®

- Mechanical Connectors
- Color-Keyed® Compression System Lugs and Splices
- KUBE™ Power Connectors and Motor Lead Disconnects

E-Z-CODE®

- Marking Systems

Kopex-Ex™

- Hazardous Location Conduit Systems

PMA®

- Halogen-Free Nylon Liquidtight Conduit Systems
- Hazardous Location Ex-System

Shrink-Kon™

- Heat-Shrinkable Wire Protection Insulation
- Self-Fusing Insulation Tape

Sta-Kon®

- Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools
- Insulated and Non-Insulated Disconnects

Superstrut®

- 316 Stainless Steel, Aluminum or Nonmetallic Channels
- Hangers and Clamps
- Seismic Bracing System

T&B® Fittings

- Wire-Mesh Strain-Relief Cord and Conduit Grips
- STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables

Ty-Duct™

- Halogen-Free Wiring Duct

Ty-Rap®

- Low-Smoke and Flame-Retardant UL94V-0 Cable Ties
- Detectable Cable Ties
- Manual and Pneumatic Cable Tie Installation Tools
- Abrasion-Protection Sleeving
- Spiral Wrap Harnessing

What are your panels' safety features?

Repetitive stress injury (RSI) affects approximately 1.8 million workers per year across North America. The right application tools can help reduce operator strain when installing crimp terminals, compression lugs and cable ties.



Total Project Cost Reduction

Increasing profitability while maintaining quality, reliability and safety requires continuous improvement of operational efficiencies. With global commerce increasing, many Canadian system integrators and panel builders are using more IEC components, which often cost less. The labour-to-materials-and-equipment mix changes with the level of panel design complexity, and with labour representing as much as 50 percent of panel cost, installation time reduction is an ideal way to reduce costs and increase profit margin. Thomas & Betts offers total project cost reduction solutions to help you achieve savings in:

- Labour
- Materials
- Equipment
- Logistics

Ty-Duct™

Nonmetallic Wiring Duct, Tools and Accessories

- Triple-restricted slots and universal mounting clip enable fast and neat internal wire bundling
- Two-point contact cover with writable protective film installs/removes easily, yet won't accidentally slip off
- Bench-mount cutter provides fast, dust-free operation

PMA®

PMAFIX® Safety and Sealing Fittings Systems

- Meets all ingress protection categories up to and including IP68 and IP69K, also when the conduit connection is continually in motion.
- Fulfills highest international quality and standard requirements
- Intelligent safety locking mechanism
- Allows simple push-in installation of conduits
- IP69K sealing systems offer a 360° locking and sealing element, which shields against high-pressure water jets (up to 100 bar)



Ty-Duct™
Nonmetallic
Wiring Duct, Tools
and Accessories



PMA®
PMAFIX®
Safety and Sealing
Fittings Systems



Carlion®
Nonmetallic
Enclosures



Blackburn®
Compression Connectors
and Tools



Kopex-Ex™
ISR™ Industrial
Strain-Relief Fittings



Carlion®

Nonmetallic Enclosures

- NEMA and JIC designs
- Lightweight, impact-resistant, nonmetallic material withstands harsh, wet and corrosive environments

Blackburn®

Compression Connectors and Tools

- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections
- KUBE™ flag, tee and cross connectors
- HEX-FLEX™ die system yields superior terminations with fewer crimps for flex cable

KOPEX-Ex™

ISR™ Industrial Strain-Relief Fittings

- Globally certified to meet 100% of pullout requirements
- For use with unarmoured cable types suitable for use in Class I, Zone I



Thomas & Betts products for total project cost reduction

Blackburn®

- Compression Connectors featuring the Color-Keyed® Installation Tooling System
- Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- Battery-Powered and Hydraulic Compression Tools
- HEX-FLEX™ Die System
- Grounding Systems

Boreal™

- Flexible Braids

Carlton®

- Nonmetallic Enclosures

PMA®

- GT Series for Conduit and Fittings

Shrink-Kon™

- Heat-Shrinkable Wiring Products
- Self-Fusing Insulation Tape

Sta-Kon®

- Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools

Superstrut®

- Modular Metal Framing System and Accessories
- Trapnut™ Strut Fastener and Cobra® Clamp

T&B Cable Tray Systems

- Aluminum, Stainless Steel and Fiberglass Support and Wire Management Systems

T&B® Fittings

- Multi-Hole Cord Grips — Metallic and Nonmetallic
- Blackjack® Grounding Bushings
- LU™ Universal Conduit Elbows — BlueKote™ and Stainless Steel
- Form 8 Conduit Bodies — BlueKote™ and Stainless Steel
- STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables

Ty-Duct™

- Nonmetallic Wiring Duct
- Bench-Mount Cutter
- Tools and Accessories

Ty-Rap®

- Ergonomic Manual and Pneumatic Cable Tie Installation Tools
- Multi-Coloured Nylon Cable Ties
- Fasteners and Mounting Accessories

In what areas of your operation could you reduce costs to increase your profit margin?

Approximately 80% of panels are custom-built. The average panel is 3 ft. x 3 ft. in size and takes 40 hours to build.

Carrying excess inventory is as much of a drag on company profitability as inefficient production processes. The more item SKUs (stock keeping units) you maintain, the greater the complexity of tracking systems and expense to manage inventory — both of which result in revenue loss. Thomas & Betts has a heritage of innovation, and an important characteristic of many new Thomas & Betts products is their ability to replace multiple existing SKUs with one. Our SKU reduction solutions help you:

- Save space in your storeroom
- Reduce inventory items to manage
- Increase cash on hand

T&B® Fittings

STAR TECK EXTREME® Jacketed Metal-Clad Cable Fittings

- Innovative range-taking design reduces inventory and speeds installation
- Easy to install — no disassembly required

Ranger™ Cord Connectors

- Cable range of 0.25" — twice that of ordinary strain-relief connectors — thus reducing inventory
- Smaller overall size to fit into tight spaces
- Choice of aluminum, steel, stainless steel and nonmetallic materials

LU™ Universal Conduit Elbows

- Can replace LL, LR, LB and C conduit bodies for a 4-to-1 SKU reduction
- Radius is the same as bent conduit — therefore, rated for 40% wire fill
- Available in BlueKote™ finish, stainless steel or with Ocal™ PVC coating



Blackburn®

HEX-FLEX™ Die System

- Reduces installation time by providing a superior termination with fewer crimps for flex cable
- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections

SMART™ Tools

- Die-less, 12-ton compression tools use indent-style crimp
- Crimp up to 900 kcmil copper or 750 kcmil aluminum
- Available in manual hydraulic, battery-powered and hydraulic head styles

ExpressTray®

Steel Wire Basket Tray

- Ideal for light power, data and voice cabling
- Any layout can be achieved with a length of tray and a wire cutter
- Easy to customize tray fittings on site
- Patented QuikLok® tray profile connects straight lengths of tray at record speed with no additional components or tools required
- Easy reconfiguration to meet future needs



T&B® Fittings
Ranger™ Cord
Connectors



T&B® Fittings
LU™ Universal
Conduit Elbows



T&B® Fittings
STAR TECK EXTREME®
Jacketed Metal-Clad
Cable Fittings



Blackburn®
HEX-FLEX™ Die System
and SMART™ Tools



ExpressTray®
Steel
Wire Basket Tray



Thomas & Betts products for SKU reduction

***In what ways could you
reduce inventory and
increase cash on hand?***

***Reducing SKUs enables
you to lower inventories,
improve efficiencies
and apply resources
more effectively and
appropriately. Plus,
fewer SKUs means less
time to maintain stock
and fulfill inventory
— time savings that
also translate to lower
operating costs.***

Blackburn®

- Compression Connectors featuring the Color-Keyed® Installation Tooling System
- Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- HEX-FLEX™ Die System
- SMART™ Tools

PMA®

- Single-Piece PMAFIX®

Superstrut®

- Modular Metal Framing System and Accessories
- Cobra® Clamp

T&B Cable Tray Systems

- ExpressTray® Steel Wire Basket Tray

T&B® Fittings

- Bond Star® Grounding Locknuts
- Ranger™ Cord Connectors
- LU™ Universal Conduit Elbows — BlueKote™ and Stainless Steel
- STAR TECK EXTREME® Jacketed Metal-Clad Cable Fittings
- Multi-Hole Cord Grips — Metallic and Nonmetallic



Space Savings

When it comes to panels, space is money. The switch from analog to digital components requires less space and reduces wiring, saving space, labour, time and money. Thomas & Betts offers products designed to maximize panel real estate, enhance wire management and help boost your panels' aesthetics. In addition, we also provide high-temperature solutions built to withstand higher ambient temperatures inside crowded enclosures. Our space-saving panel solutions are designed to:

- Offer space savings up to 300%
- Make your panels easier to build and maintain
- Keep your panel technicians and customers safer
- Reduce the size and cost of your panel enclosure and wiring

Blackburn®

Narrow-Tongue Lugs

- Consistent narrow width from barrel to tongue to fit into tight spaces
- Featuring the Color-Keyed® Installation Tooling System that ensures proper connections

KUBE™ Flag, Tee and Cross Connectors

- Space-saving 90°, tee and cross connections
- Use with standard compression lugs and splices and install with standard compression tools

Pos-E-Kon™

Rectangular Pin-and-Sleeve Connectors

- Best use of space for multiple contacts in heavy-duty housings
- Rugged, industrial-grade connectors provide universal raceway flexibility
- Easy-lock, cam-action latch eliminates guesswork and speeds installation



Ty-Rap®

Cable Ties, Mounting Accessories and Tools

- Rounded, low-profile head and smooth, molded body
- Available in a variety of high-performance materials to handle harsh and plenum environments
- Complete line of mounting bases, spiral wrap harnessing, abrasion-protection sleeving and installation tools

T&B® Fittings

CHASE® Fittings

- Compact, low-profile fittings — ideal for limited space
- Line encompasses nipples and hubs for rigid conduit, as well as liquidtight conduit fittings and cord connectors

Multi-Hole Cord Grips

- Space- and labour-saving metallic or nonmetallic cord fittings for panels
- Up to 4-to-1 SKU reduction — purchase, stock and install one fitting versus four

STAR TECK EXTREME® DIRECTOR® Jacketed Metal-Clad Cable Fittings

- Innovative range-taking design reduces inventory and speeds installation
- Allow angle adjustment from 90° to 180° to eliminate the need to use a conduit elbow to make bends
- Easy to install — no disassembly required



Blackburn®

Narrow-Tongue Lugs and KUBE™ Flag, Tee and Cross Connectors

Pos-E-Kon™

Rectangular Pin-and-Sleeve Connectors

Ty-Rap®

Cable Ties, Mounting Accessories and Tools

T&B® Fittings

CHASE® Fittings and Multi-Hole Cord Grips

T&B® Fittings

STAR TECK EXTREME® DIRECTOR® Jacketed Metal-Clad Cable Fittings

Thomas & Betts products for space savings

**Would you like more
space in your panels?**

**Innovations like
Blackburn® KUBE™ flag,
tee and cross connectors
can save significant
real estate in your
panel, because a KUBE™
connector can achieve
a 90° turn in a fraction
of the space required by
flex cable bending radius
restrictions.**

Blackburn®

- Narrow-Tongue Lugs
- 45° and 90° Angled Lugs
- Stacking Lugs
- KUBE™ Flag, Tee and Cross Connectors

Pos-E-Kon™

- Rectangular Pin-and-Sleeve Connectors

Sta-Kon®

- Pin Terminals
- Insulated and Non-Insulated Ferrules

T&B® Fittings

- Multi-Hole Cord Grips — Metallic and Nonmetallic
- Bond Star® Grounding Locknuts
- CHASE® Fittings — Nipples, Conduit Hubs, Liquidtight Conduit and Cord Fittings
- Liquidtight Conduit Fittings
- Ranger™ Cord Connectors
- Revolver™ Liquidtight Grounding Fittings
- STAR TECK EXTREME® DIRECTOR® Jacketed Metal-Clad Cable Fittings

Ty-Duct™

- Nonmetallic Wiring Duct
- Bench-Mount Cutter
- Tools and Accessories

Ty-Rap®

- Abrasion-Protection Sleeving
- Spiral Wrap Harnessing
- Cable Ties, Fasteners and Mounting Accessories
- Ergonomic Manual and Pneumatic Cable Tie Installation Tools



Liquid Ingress Protection

Electrical control panels are used in a variety of environments that can negatively affect their performance and lifespan, such as areas that have liquids and steam present from manufacturing processes or outdoor weather exposure. Lubricants and oils used on manufacturing equipment can also find their way into electrical systems. Panels installed in food and beverage processing plants may be exposed to high-pressure washdown cleaning procedures, while panels found in pulp and paper mills must be able to withstand the steam found in most paper processing areas.

When specifying electrical components for electrical control panels, consider the following issues relating to wet environments and liquid exposure:

- Liquid ingress can deteriorate or short out an electrical system immediately or over time
- Electrical system components designed with round and sloped surfaces help to shed liquids and contaminants, rather than creating a shelf where they can collect

Thomas & Betts offers you electrical system solutions that protect against liquid, moisture and dust ingress, which will help reduce corrosion and downtime, increasing electrical system lifecycle and improving operating revenues.

Shrink-Kon™

Self-Fusing Insulation Tape

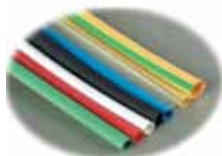
- Easy-to-install insulation for harnesses, wires or cables – no heat or adhesive required
- Just two layers form a moisture-proof, abrasion-resistant, dielectric seal for low- or high-voltage applications

Heat-Shrinkable Insulation

- Provides superior conductor, connection and termination protection
- Helps to ensure continuous, reliable operation



Shrink-Kon™
Self-Fusing Insulation Tape



Shrink-Kon™
Heat-Shrinkable Insulation



T&B® Fittings
Liquidtight
Cord Connectors



PMA®
PMAFIX® Pro
Connectors
and Sealing Systems



Russellstoll®
DuraGard® Pin-and-
Sleeve Connectors



T&B® Fittings

Liquidtight Cord Connectors

- Provide exceptional mechanical strain-relief
- Create a dependable seal against dust, oil and other liquids
- Designed to handle the unique connection demands of flexible cords and power cables
- CSA Certified and UL Listed

PMA®

PMAFIX® Pro Connectors and Sealing Systems

- Meet all ingress protection categories up to and including IP68 and IP69K, also when the conduit connection is continually in motion
- Fulfill highest international quality and standard requirements
- Intelligent safety locking mechanism
- Allow simple push-in installation of conduits
- IP69K sealing systems offer a 360° locking and sealing element, which shields against high-pressure water jets (up to 100 bar)

Russellstoll®

DuraGard® Pin-and-Sleeve Connectors

- Not just watertight, but waterproof, mated or unmated
- Tested to 1000 psi for washdown applications
- Full line of 20–60 A (600 VAC/250 VDC max.) connectors, plugs and receptacles in UL94V-0 flammability-rated, corrosion-resistant, nonmetallic housings



Thomas & Betts products for liquid ingress protection

Carlton®

- Polycarbonate NEMA and JIC Enclosures

PMA®

- Flexible Nylon Cable Protection Systems

Russellstoll®

- DuraGard® Industrial Interconnect System — Plugs, Receptacles and Connectors
- IEC 309 Rated Pin-and-Sleeve Plugs, Connectors and Receptacles

Shrink-Kon™

- Heat-Shrinkable Insulation
- Splice Insulators
- Self-Fusing Insulation Tape

Sta-Kon®

- Heat-Shrinkable Terminals

T&B® Fittings

- Stainless Steel Form 8 and BlueKote™ Conduit Bodies
- Liquatite™ Flexible Metallic and Nonmetallic Conduit
- Stainless Steel and Nonmetallic Liquidtight Conduit Fittings
- Ranger™ Series Stainless Steel and Nonmetallic Liquidtight Cord Connectors
- Silver Grip® Stainless Steel Tray Cable and Cord Fittings
- STAR TECK® and STAR TECK XP® Stainless Steel and PVC Coated Fittings for Jacketed Metal-Clad and Teck Cable

Ty-Rap®

- Coated and Uncoated Stainless Steel Cable Ties

What NEMA and IP ratings are required to prevent liquids from getting into your electrical control panels?



Grounding, Bonding & EMC Protection

A stable power supply is the backbone of any facility. Power failure or instability can cause safety, production and operational issues, significantly impacting a company's bottom line. Ineffective grounding can lead to voltage variances that damage electrical equipment or electronic devices, resulting in power loss and costly downtime. Many power problems stem from incorrect bonding of transformers, main electrical panels, subpanels, UPS systems and generators. Proper grounding and bonding are critical to ensuring safety, preventing service disruptions and providing electrical continuity and reliability. Thomas & Betts grounding and bonding solutions are designed to:

- Ensure personnel safety
- Eliminate lightning interruptions and protect critical equipment
- Provide electrical continuity and reliability
- Meet IEEE, CEC, UL and CSA requirements

T&B® Fittings

Revolver™ Liquidtight Grounding Fittings

- Designed for use where an external bonding jumper is required for liquidtight flexible metal conduit
- Revolving grounding ring provides flexibility in positioning for ease of installation

Bond Star®

- Grounding locknuts for use in data and control applications
- Innovative design makes installation quicker and easier

PMA®

EMC (Electromagnetic Compatibility) System

The PMA® EMC System provides an additional function within the PMA® Cable Protection System, offering high-quality shielding against electromagnetic signals over and above the mechanical cable protection.

- PMA® EMC fittings are designed for optimal termination of the tinned-copper screening braids
- 360° braid termination: high degree of safety in case of short-circuiting
- Low coupling resistance, low transfer impedance
- Disturbance signals, such as electrical signals and magnetic fields will be discharged to the housing casing



Blackburn®

Grounding Systems

- Superior grounding and bonding of electrical systems and equipment
- Mechanical connectors require no special tools to install
- Compression connectors featuring the Color-Keyed® installation tooling system

Boreal™

Flexible Braids

- Variety of flexible braids and accessories for grounding
- Extra-flexible links for heavy-duty applications to 3,600 A
- Standard links for medium-duty applications to 2,350 A

Sta-Kon®

Shield-Kon® Coaxial Grounding Connectors

- One- and two-piece coaxial connectors for grounding
- Save time and reduce assembly costs
- Low profile and compact size



T&B® Fittings

Revolver™ Liquidtight
Grounding Fittings and
Bond Star® Grounding Locknuts



PMA®

EMC System



Blackburn®

Grounding Systems



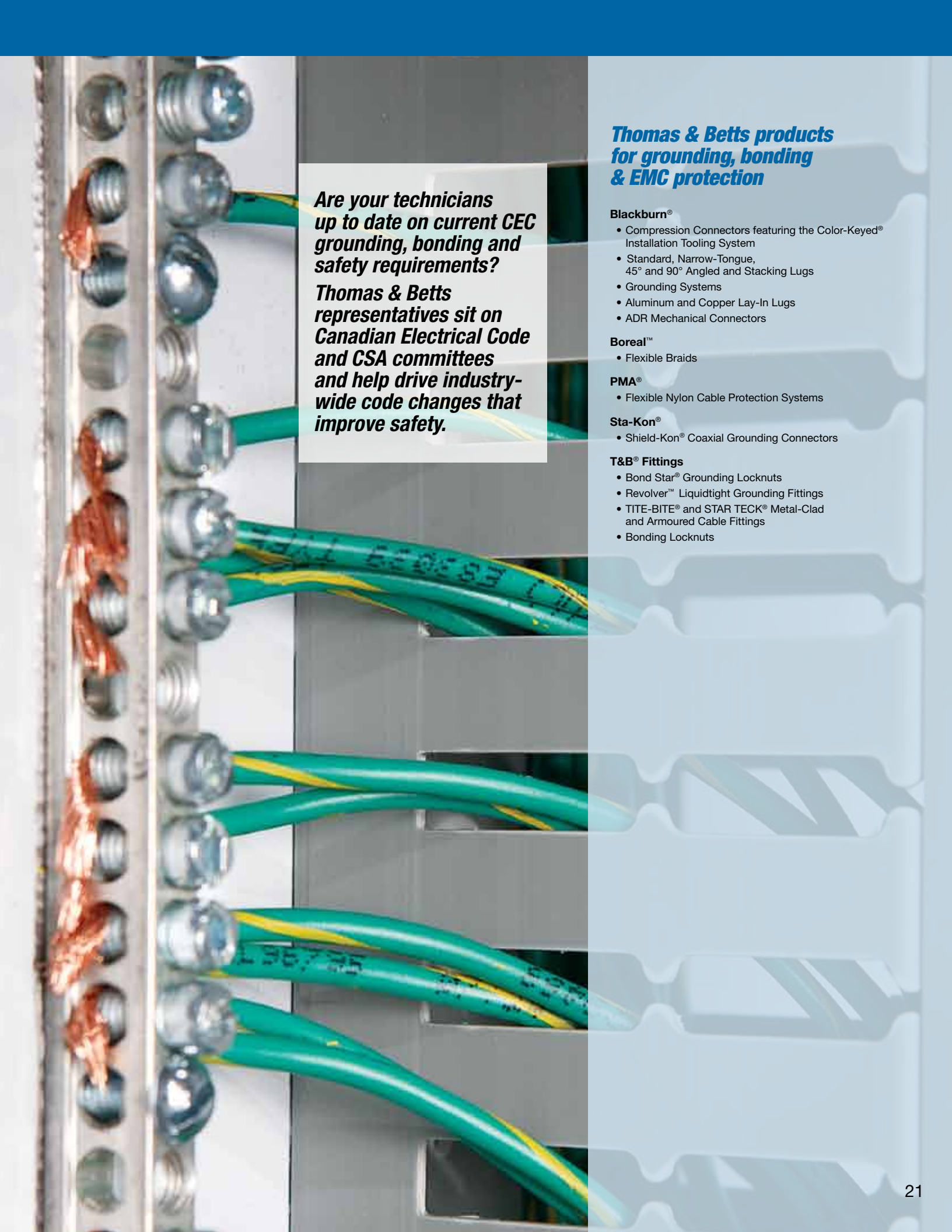
Boreal™

Flexible Braids



Sta-Kon®

Shield-Kon® Coaxial
Grounding Connectors



***Are your technicians
up to date on current CEC
grounding, bonding and
safety requirements?***

***Thomas & Betts
representatives sit on
Canadian Electrical Code
and CSA committees
and help drive industry-
wide code changes that
improve safety.***

Thomas & Betts products for grounding, bonding & EMC protection

Blackburn®

- Compression Connectors featuring the Color-Keyed® Installation Tooling System
- Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs
- Grounding Systems
- Aluminum and Copper Lay-In Lugs
- ADR Mechanical Connectors

Boreal™

- Flexible Braids

PMA®

- Flexible Nylon Cable Protection Systems

Sta-Kon®

- Shield-Kon® Coaxial Grounding Connectors

T&B® Fittings

- Bond Star® Grounding Locknuts
- Revolver™ Liquidtight Grounding Fittings
- TITE-BITE® and STAR TECK® Metal-Clad and Armoured Cable Fittings
- Bonding Locknuts

High-quality products to address key issues in

Thomas & Betts Brands	Products	Continuous Operation & Sustainability
Blackburn®	Compression Connectors featuring the Color-Keyed® Installation Tooling System	•
	Standard, Narrow-Tongue, 45° and 90° Angled and Stacking Lugs	•
	KUBE™ Flag, Tee and Cross Connectors	•
	Battery-Powered and Hydraulic Compression Tools and Die Systems	•
	Grounding Systems, ADR Mechanical Connectors, Aluminum and Copper Lay-In Lugs	•
Boreal™	Flexible Braids	•
Carlon®	Nonmetallic Enclosures	•
E-Z-CODE®	Marking Systems	•
Iberville®	Device Boxes and Covers	•
	Metallic and Nonmetallic Fittings	
Kopex-Ex™	Hazardous Location Conduit Systems	
Ocal™	Corrosion-Resistant PVC-Coated Conduit and Fittings	•
PMA®	Halogen-Free Flexible Nylon Cable Protection Systems – PMAFIX®, EMC, Ex-System	•
Pos-E-Kon™	Rectangular Pin-and-Sleeve Connectors	
Russellstoll®	DuraGard® Industrial Interconnect System	•
	IEC 309 Rated Pin-and-Sleeve Plugs, Interconnections	•
Shrink-Kon™	Heat-Shrinkable Wire Protection Insulation and Self-Fusing Insulation Tape	•
Sta-Kon®	Automated, Hydraulic, Pneumatic, Battery-Powered and Manual Application Tools	
	Crimped Wire Termination Systems – Rings, Forks, Splices, Disconnects and Wire Joints	•
	Insulated and Non-Insulated Ferrules and Pin Terminals	•
	Shield-Kon® Coaxial Grounding Connectors	
Superstrut®	Modular Metal Framing System and Accessories	•
	Seismic Bracing System	•
	Trapnut™ Strut Fastener and Cobra® Clamp	
T&B® Fittings	Bond Star® Grounding Locknuts	
	CHASE® Fittings – Nipples, Conduit Hubs, Liquidtight Conduit and Cord Fittings	
	LU™ Universal Conduit Elbows – BlueKote™ and Stainless Steel	
	Form 8 Conduit Bodies – BlueKote™ and Stainless Steel	
	ISR™ Industrial Strain-Relief Fittings	•
	Liquatite™ Flexible Metallic and Nonmetallic Conduit	•
	Steel, Stainless Steel, Aluminum and Nonmetallic Liquidtight Conduit and Cord Fittings	•
	Multi-Hole Cord Grips – Metallic and Nonmetallic	
	Ranger™ Cord Connectors	
	Revolver™ Liquidtight Grounding Fittings	
	STAR TECK® Fittings for Jacketed Metal-Clad and Teck Cables	
	TITE-BITE® Metal-Clad and Armoured Cable Fittings	
	Wire-Mesh Strain-Relief Cord and Conduit Grips	•
Bonding Locknuts		
Ty-Duct™	Nonmetallic and Halogen-Free Wiring Duct, Bench-Mount Cutter, Tools and Accessories	•
Ty-Rap®	Abrasion-Protection Sleeving and Spiral Wrap Harnessing	•
	Multi-Coloured Nylon Cable Ties, Fasteners and Mounting Accessories	
	Low-Smoke, Flame-Retardant UL94V-0 and Detectable Cable Ties	
	Coated and Uncoated Stainless Steel Cable Ties	
	Ergonomic Manual and Pneumatic Cable Tie Installation Tools and Ty-Rap® Tote™ Cable Tie Dispensers	

panels

Safety	Total Project Cost Reduction	SKU Reduction	Space Savings	Liquid Ingress Protection	Grounding, Bonding & EMC Protection
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Thomas & Betts Specification Guide

Thomas & Betts product guide specifications are available as Microsoft Word documents at www.tnb.com. They follow the CSI three-part format, using section numbers from Master Format® 2010 Update. This enables their simple and seamless incorporation into any CSI compliant electrical specification. Following are products referenced in this brochure:

- 26 05 19.01** Cord and Cable Fittings
- 26 05 26.01** Compression and Mechanical Grounding Connectors
- 26 05 33.24** Liquidtight Conduit Fittings
- 26 05 33.31** Industrial-Grade AC, FMC and MC Fittings
- 26 05 33.32** Jacketed Metal-Clad Cable Fittings
- 26 05 33.33** Industrial-Grade Nonmetallic Liquidtight Fittings and Conduit
- 26 05 33.54** Industrial-Grade Conduit Bodies
- 26 05 33.56** Explosion-Proof Conduit Outlet Bodies and Fittings
- 26 05 34** Wiring Duct
- 26 05 53** Identification for Electrical Systems
- 26 05 83.11** Wiring Connections: Solderless Crimp Terminals
- 26 05 83.12** Wiring Connections: Compression Lugs, Splices and Connectors
- 26 05 83.18** Wiring Connections: Flexible Braided Connectors
- 26 05 83.20** Wiring Connections: Heat-Shrinkable Tubing
- 26 05 84** Wire and Cable Fastening
- 26 27 26.12** Wiring Devices: Nonmetallic Pin-and-Sleeve

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Visit the Thomas & Betts world of electrical product solutions

Visit our web site for more information about Thomas & Betts solutions and our newest products. For a user-friendly catalogue and competitive part number search, application and technical support and other useful information, go to: www.tnb.ca

Industry codes and specifications

All Thomas & Betts products for system integrators and panel builders meet or exceed applicable industry specifications or codes detailed in the appropriate Thomas & Betts product literature.



Online CAD library

Thomas & Betts offers free download of two- and three-dimensional CAD models of many of its products in more than 90 native CAD formats at: www.tnb.com/cadlibrary



All information and specifications contained in this catalogue are subject to change due to engineer design, errors and omissions. Illustrations and diagrams within this catalogue may vary from actual products.

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