PANDUIT®

POWER
ON

COMPREHENSIVE CONTROL PANEL SOLUTIONS

For Design Flexibility and Lowest Total Cost of Ownership

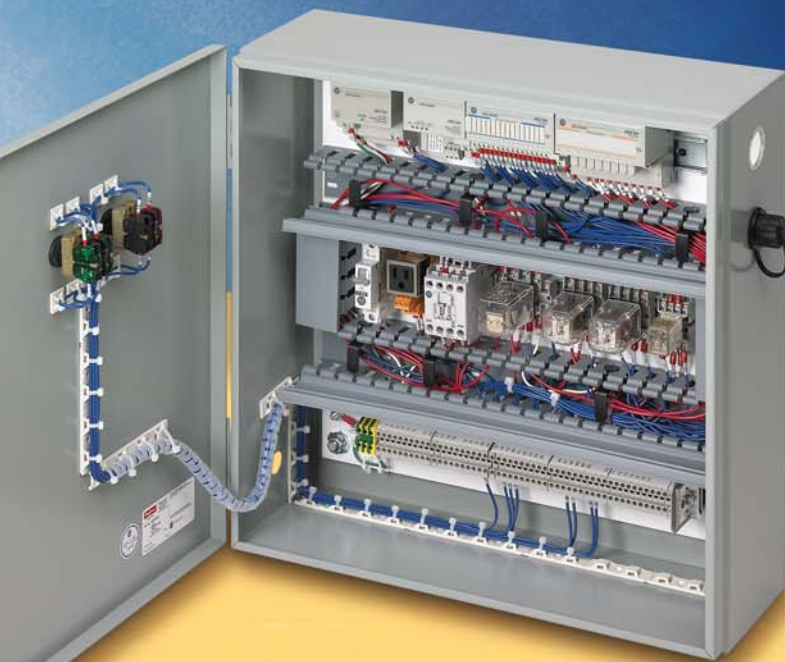## Solutions to Deliver Design Flexibility and Lowest Cost of Ownership

Control panels are used in virtually all manufacturing environments and are an integral part of any automation or process control system. With the use of programmable logic controllers (PLCs) and network communications, components such as varible frequency drives and other input/output (I/O) devices can be **distributed** instead of being centrally located in a single control panel. **Network cabling** and distributed controls help simplify panel design and can result in reduced panel space and operational costs.

Because of the demand for **interoperability**, and the need to share data and monitor systems more thoroughly, **industrial Ethernet** is becoming more common in industrial automation and process controls. The ability to control, monitor and troubleshoot the process directly through a terminal or an Internet browser, from any location, can provide significant cost savings and improved manageability.

Panel builders report an increase in the sophistication of the systems being designed. These same systems are expected to be commissioned, designed and built in less time than ever before. Panel shops, engineering firms, and system integrators are pressured to speed production and control costs, while maintaining quality and reliability.

PANDUIT delivers innovative solutions that support evolving technologies and standards. Control panel solutions from PANDUIT reduce design and assembly time, save valuable panel space, ease installation and maintenance, and improve manageability and reliability, all contributing to lower cost of ownership.

PANDUIT has joined forces with ECT International to further reduce the time required for control system design. The promis•e* electrical CAD software speeds the design process by linking design screens with engineering, production, and business documentation, as well as integrating PANDUIT solutions into the CAD data base.

PANDUIT has joined forces with ECT International to provide promis•e* electrical CAD software to allow users to design and document control systems with up to a 50% time savings

*promis•e is a registered trademark of ECT International, Inc.

PANDUIT Comprehensive Control Panel Solutions

Innovation, Quality & Service

Whether you are designing controls for a machine, process, work cell, plant floor or a fully integrated plant and office network, *PANDUIT* is your trusted partner.

PANDUIT provides an extensive system to bundle, route, protect, terminate, and identify wiring and cabling in control panels, as well as copper and fiber connectivity for industrial networks. *PANDUIT* control panel solutions offer the broadest range of options for the most demanding customer requirements and applications. In combination with *PANDUIT* world-class quality and support, panel builders and system integrators enjoy design flexibility, lowest cost of ownership, and reduced time to market.

- To ensure that our solutions and services keep customers ahead of the curve, *PANDUIT* invests 10% of net sales in research and development every year to support evolving trends and technology

- All products undergo rigorous performance tests to ensure they not only meet, but exceed applicable industry standards for maximum reliability, so you can specify *PANDUIT* with confidence

- Our highly-trained sales force, technical support and customer service provide dedicated and market-focused expertise to assist in the evaluation, purchase, design and implementation to solve your unique business challenges

- Customers count on the *PANDUIT* service advantage and global product availability to help keep their projects on schedule and on budget

For complete product specific information on industry standards and approvals, go to www.panduit.com.

Control Panel Solutions

1 Wiring Duct

PANDUCT Wiring Duct is the industry leading wire management solution for routing, protecting, and concealing wiring in electrical control panels. The most complete range of styles, sizes, materials and colors provides optimum design flexibility to meet the full spectrum of applications.

2 Cable Ties

PANDUIT leads the industry with the most complete selection of cable tie styles, sizes, materials and colors. Ergonomic cable tie installation tools ensure consistent, reliable performance.

3 Cable Accessories

PANDUIT cable accessories provide the largest selection of mounts, clips, and clamps. This versatile offering is designed to speed installation and lower installed cost for routing and managing cable.
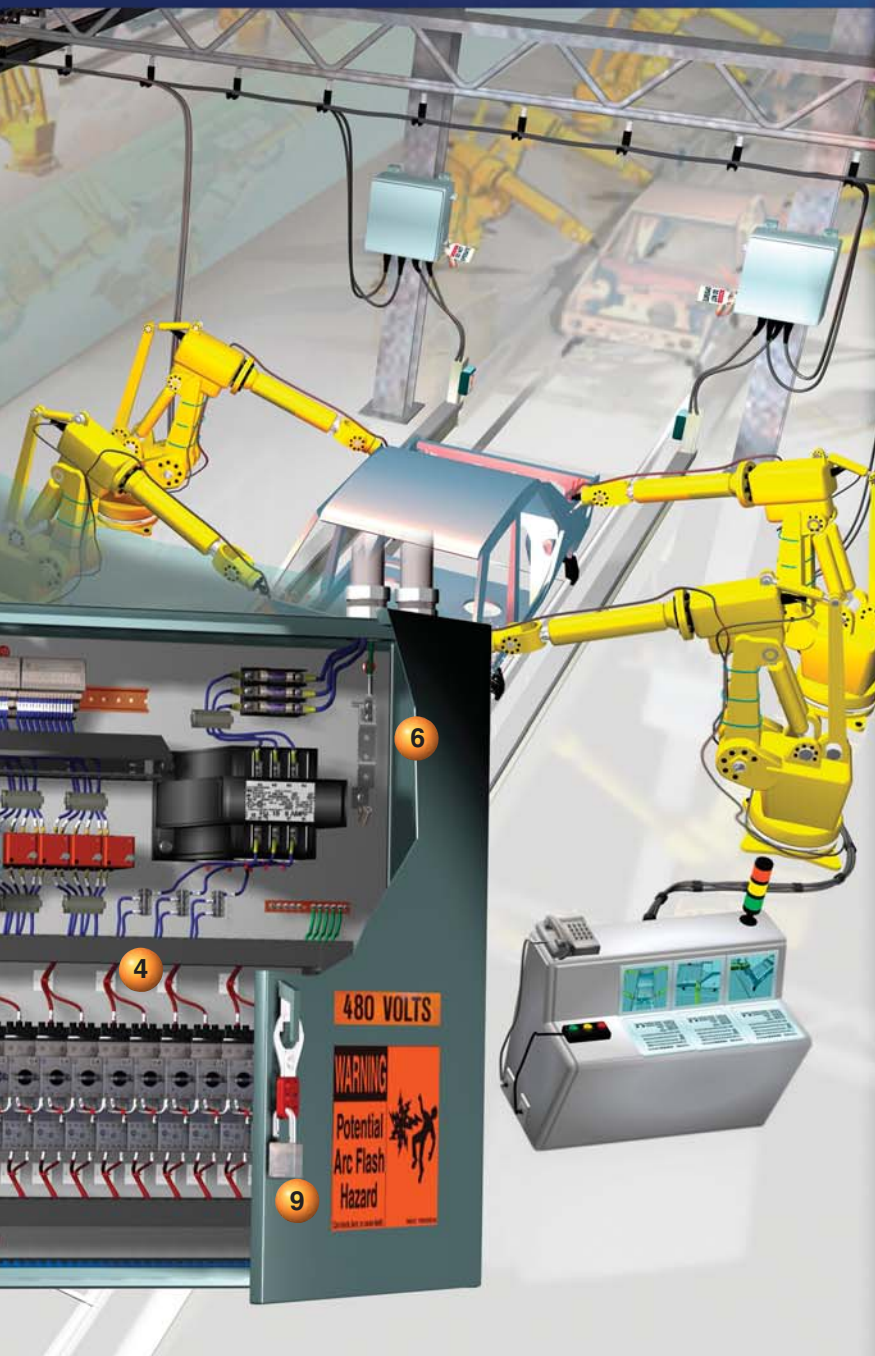
4 Labeling Systems

PANDUIT is an industry leader in reliable and innovative identification solutions. The full line of labels, software, and printers assists with meeting control panel requirements and industry standards.

5 Terminals

PAN-TERM Terminals are available in a wide array of disconnects, splices, ferrules, rings, forks, flanged forks, locking forks and short locking forks in sizes ranging from #26 to 2 AWG. Non-insulated terminals range from #24 to 250 kcmil. Ergonomic crimping tools provide consistent, reliable installations.

4

6 Power and Grounding Connectors

Pan-Lug™ Power and Grounding Connectors are designed for use with many different code and flex conductor types from #14 AWG to 1000 kcmil. A variety of crimping tools provide consistent, reliable terminations.

7 Industrial Ethernet

The *IndustrialNet*™ Solution provides *TX5e*™ and *TX6*™ Connectors and Patch Cords for consistent, reliable terminations in harsh manufacturing environments. The *PANDUIT* Ethernet Enclosure provides protection for the switch and allows for a more flexible, lower cost topology.

8 Abrasion Protection

PANDUIT abrasion protection products provide an economical and easy way to insulate, protect, bundle and color code components and cable. The full offering includes split harness wrap, braided expandable sleeving, corrugated loom tubing, spiral wrap, grommet edging and heat shrink.

9 Lockout/Tagout

PANDUIT offers a complete line of lockout/tagout products to aid in compliance with OSHA 1910.147. Training manuals and videos further support an effective lockout/tagout program.

PANDUCT® Wiring Duct

PANDUIT® *PANDUCT®* Wiring Duct is the premier wire management solution for routing, protecting, and concealing wiring in control panels. The comprehensive product line includes innovative and unique features that provide tangible installation and maintenance benefits to panel builders and end users.

Offers Ease of Installation

Features such as smooth edges, dual score lines, and adhesive backing, together with installation tools and handy accessories, offer increased productivity and safety ensuring lowest installed cost.

Provides Design Flexibility

Available in profile sizes from .5" x .5" to 6" x 4" and in seven different styles to support a wide range of control panel applications and preferences.

Meets and Exceeds Performance Standards

Specially formulated materials exceed UL and NFPA industry standards for flammability as well as provide the necessary function for special environment applications.

PANDUCT® Featured Products

- **PANDUIT® PANELMAX™ Corner Wiring Duct**

  When maximizing space is important, consider *PANELMAX™* Corner Wiring Duct. Fitting into the unused vertical corner of enclosures, *PANELMAX™* Corner Wiring Duct provides an additional 5 ft.^{2} of sub-panel space. Panel builders can achieve up to a 20% reduction* in the enclosure footprint or use the space to mount additional control panel components.

- **Type H Hinged Cover Wiring Duct**

  Reduce maintenance costs by up to 20% with Type H Hinged Cover Wiring Duct. Unique hinged design allows convenient access to wires, ideal for panel additions and changes. Avoid misplaced duct covers and reduce installation costs with Type H Hinged Cover Wiring Duct.

- **Type NNC Halogen Free Wiring Duct**

  For safety and protection, Type NNC Halogen Free Wiring Duct is non-toxic, lead-free and environmentally safe. NNC Halogen Free Wiring Duct provides improved safety in the event of a fire and delivers increased heat resistance for outdoor or high temperature environments.

*Actual sub-panel space savings may vary.

Maximum Design Flexibility

Broadest selection of sizes, styles, and materials for use in indoor/outdoor and harsh environment applications.

Fast and Reliable Installations

Designed to meet or exceed industry standards with superior product features such as low thread force and high tensile strength to provide the highest quality and lowest installed cost.

Improved Productivity

Full line of ergonomic cable tie tools install ties quickly and reliably, providing flush tie cut-off for safe installations.

Design Flexibility

An extensive range of mounts, clips and clamps allow control panel builders to select from adhesive backed, user applied adhesive, screw, rivet or push barb mounting options.

Conserve Space

Low profile mounts, designed to position bundle closer to mounting surface, provide reduced standoff height of cable.

Speed Installation

The comprehensive offering of accessories is engineered to increase productivity and lower installed costs for routing and managing cable.

PANDUIT Labeling Systems

PANDUIT is a global leader in reliable and innovative identification solutions. *PANDUIT* provides enhanced productivity, reliability, and value with leading edge software development, materials and equipment. The comprehensive line includes labeling products, software, and printers.

Save Time and Reduce Labeling Errors

Thermal Transfer Desktop, Hand-Held, and Portable Printers enable fast, high quality label production for control panel identification. Use *PANDUIT* labeling software and printers to produce on-demand identification solutions accurately, quickly, and economically.

Optimize Design Flexibility

Select from a variety of computer printable label materials, sizes, and colors with tools and durable label materials for any control panel application including self-laminating, terminal, and heat shrink markers.

Ensure Reliability

World-class quality solutions provide high performance, reliable identification that meets and exceeds the requirements of UL, CSA, ISO, NEC and OSHA.

PANDUIT Featured Products

- *PANTHER*™ **LS8 Hand-Held Thermal Transfer Printer**

  This versatile printer, with revolutionary label cut-to-length functionality, eliminates label waste and label trimming labor. Print high quality, industrial labels on a wide variety of materials for wire/cable, component, safety and facility identification. The fast-loading label cassettes contain an integrated memory device for automatic formatting, recall of last legend used, and number of labels remaining in the cassette. USB interface equipped for importing data, system upgrades, and printing labels from a wireless laptop or desktop computer.

- *EASY-MARK*™ **Labeling Software**

  Generate labels quickly and easily with *EASY-MARK*™ Labeling Software with panel shop application tools that assist in creating optimum wire/cable labels, terminal block labels, heat shrink labels, safety signs and pipe markers. Features such as WYSIWYG user interface, data import, symbol import, barcoding and pre-loaded label formats make label creation easy and flexible.

- **Self-Laminating and Heat Shrink Labels**

  Create professional labels with crisp, clear legends and superior legibility. Labels are available in a wide variety of materials and wire/cable sizes.

PanTerm® Terminals, Disconnects, Splices and Ferrules

Pan-Lug™ Power and Grounding Connectors

Improve Productivity and Worker Safety

The full range of *PANDUIT* controlled cycle installation tools are designed for fast terminations to improve productivity. Ergonomic design reduces handle effort to crimp by 50%, when compared to plier-type tools, minimizing repetitive motion injuries and fatigue for improved worker safety.

Provide Consistent, Reliable Terminations

When *PANDUIT* premium quality terminals and tooling are used in combination, they work together to provide consistent, repeatable and reliable terminations time and time again.

Meet Industry Standards and Specifications

Meets the requirements of independent safety testing organizations. Terminals are UL Listed and Recognized, CSA Certified, ABS (American Bureau of Shipping) Approved and meet applicable military specifications.

Save Labor Time and Reduce Injuries

Battery powered hydraulic tools feature fingertip operation, two-stage rapid advance hydraulic systems and quick crimp cycle times.

Ensure High Quality Connections at Lowest Installed Cost

PAN-LUG™ Compression Connectors are UL and CSA approved with both *PANDUIT* and specified competitor crimping tools and dies to ensure safe and reliable terminations.

Save Space and Gain Maximum Design Flexibility

45° and 90° bent tongue lugs and narrow tongue lugs are available as standard parts to maximize the number of connections per linear foot.

Minimize Inventory Requirements to Lower Costs

Flex lugs terminate code conductor and flex conductor class G, H, I, K, M and Locomotive; purchase a single connector to accommodate a wide range of conductors.

INDUSTRIALNET™ Solution

PANDUIT provides integrated technology for Industrial Network applications. The *INDUSTRIALNET™* Solution offers panel builders a reliable, high-performance network cabling infrastructure and enclosures designed to withstand the harsh conditions of factory environments.

Guarantees the Physical Layer of the Network

A complete industrial Ethernet channel solution provides connectivity from the demarcation point between the office/plant, out to all Ethernet enabled devices.

Complete Integration from the Office to the Factory Floor

Integrates with *PANDUIT* network connectivity solutions; select from Category 5e, 6, UTP ScTP, fiber and M12 connectors for industrial connectivity.

Standards Compliant

All *INDUSTRIALNET™* products meet IP67/66/65 and are NEMA rated for high reliability in harsh industrial environments.

INDUSTRIALNET™ Featured Products

- **INDUSTRIALNET™ TX5e™ and TX6™ Connectors**

  IP67 rated RJ45 bulkhead connectors provide protection from dust and temporary immersion in water, typical environments found in industrial facilities.

- **INDUSTRIALNET™ Ethernet Enclosure**

  Extends the geographic limitations of traditional networks to support switch relocation to remote distributed areas of industrial facilities. DIN rail equipped with vibration mitigating back plate for improved switch integrity.

Easy, Safe and Reliable Compliance

Extensive line of lockout/tagout products to lockout a variety of energy sources is compliant with OSHA 1910.147 Lockout Standard, OSHA, NEC, NFPA as well as other safety standards.

Complete Selection to Meet Every Need

Select from pre-printed and computer printable safety signage, lockout/tagout products and kits, as well as training manuals and videos to help train employees on the requirements of lockout/tagout.

Ensure Employee Safety

PANDUIT solutions protect employees from potential injuries by providing an effective lockout/tagout program featuring innovative products and materials.

Design Flexibility

From split harness wrap to heat shrink and grommet edging, *PANDUIT* provides a variety of solutions to insulate, protect, and bundle wire and cable in a wide array of sizes and materials.

Reduced Design Time

Quality abrasion protection solutions are economical and easy to install for improved productivity at lower installed costs.

Standards Compliance

Because *PANDUIT* abrasion protection products are designed to meet industry standards/regulatory compliant control, panel builders can design and specify with confidence.

PANDUIT ®

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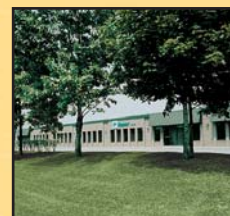cs-japan@panduit.com
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WORLDWIDE HEADQUARTERS

For a copy of *PANDUIT* product warranties, log on to www.panduit.com/warranty