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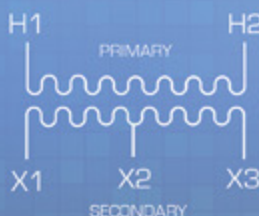
The Purchasing Guide for Electrical Contractors

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POLEMOUNT TYPE

S/N
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IMPEDANCE AT 85 °C 1.8 %
HIGH VOLTAGE 8000/10000/12000 V
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VOL. OF OIL 77 L
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PCB < 2 PPM
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Transformer Turns Ratio Testing in the 21st Century





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A Leader in Arc Flash Protection

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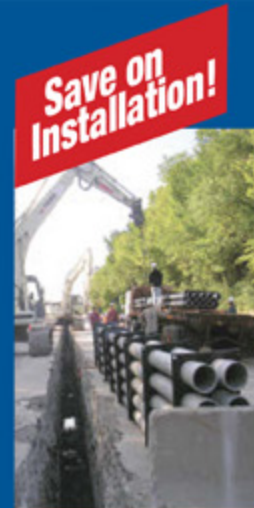
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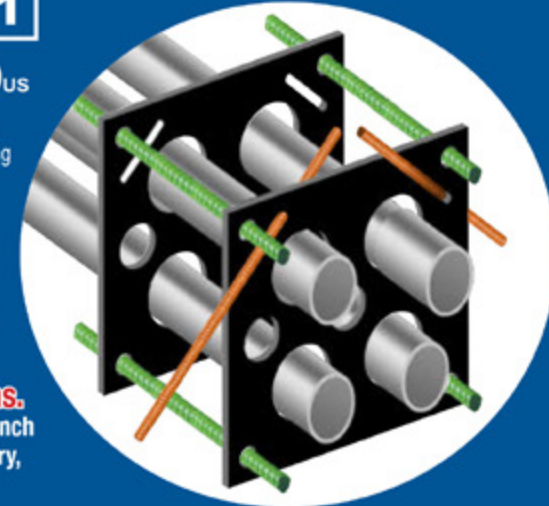
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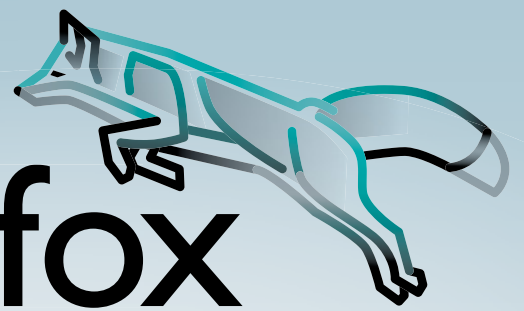


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Vince Miller started Miller Safety Consultants, a veteran owned business in 1999. The goal of the business was to provide cost effective safety consulting, employee training such as: confined space entry, fall protection, electrical safety and provide sales of electrical shock and flash protective equipment and fall protection equipment to businesses in the Washington DC area.

Reliance Industries provided fall protection products and much of the sales and training was on behalf of the supplier. In 2000, the owner decided to retire from his business, and Vince decided to discontinue the fall protection line of his business and concentrate more in the electrical training and products.

Vince had been a distributor for Certified Insulated Products (CIP), a manufacturer of electrical insulated tools and electrical arc flash clothing manufactured by Otex in Rochester, New York. As a distributor, Vince provided sales through his internet website and much through relationships with electrical contractors. His training was a classroom environment and was provided directly to customers but he also taught as a sub-contractor for other safety consulting companies and the

Chesapeake Safety Council in Baltimore, Maryland. In 2005, Vince partnered with Vivid Learning Systems in Cascades, Washington to provide on-line training in safe work practices.

Training in electrical safe work practices is still provided locally in the Washington DC area and as a partner with an electrical engineering firm and online. The training is based on the Occupational Health and Safety Administration (OSHA) standards and the National Fire Protection Association (NFPA) 70E standard.

Miller Safety Consultants is now a distributor for Cementex USA, Burlington, New Jersey, for insulated tools and equipment and clothing from OTEX Protective, Rochester, New York.

The majority of his sales of products

are from the web-based store. Cementex is nationally known for their quality equipment. Otex Protective is becoming more known for their quality clothing. For years, they have manufactured their products under other provider labels. Vince chose to not create his clothing line, but to sell the manufacturer product.

Vince has worked with many electrical company employees to fine-tune the clothing to be more comfortable for the user. Working closely with the manufacturer, they have made slight changes in how the cloth pattern was modified to meet final production. An example is the lightweight 40 Calorie vented hood offered by Otex.

The material is of the latest technology. The vented assembly is constructed for balance on the back of the hardhat and the airflow is 27 CFM to prevent fogging of the face shield and provide cooling to the worker. It took over a year to develop the product with the user prior to having the hood "flash tested". This product is now standard issue with many electrical contractors.

Being a small business and having quality providers has resulted in satisfied customers for Miller Safety Consultants. Being a direct supplier for OTEX Protective, another small business means customized customer needs can be met. □

For more information, visit
Miller Safety Consultants at:
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Transformer Turns Ratio Testing in the 21st Century

By Jeff Jowett



IN FUNDAMENTAL DESIGN, TRANSFORMERS ARE RATHER SIMPLE DEVICES. Two coils of wire are wound together on an iron core. These are referred to as “windings”. One is connected to a power source and designated the “primary”. The other provides power to a load and is called the “secondary”. Energy transfer occurs via magnetic induction and is “transformed”. The more “turns” there are to the winding, the more impedance there is, and hence the higher is the voltage that is generated across it.

But as nothing is “free” in nature, the higher voltage is achieved at the cost of current. If the secondary has more turns than the primary, voltage is increased, but with less current. This constitutes a “step up” transformer. Conversely, reverse the winding ratio and it creates a “step down” transformer, with lower voltage and more current. Having “no moving parts”, so to speak, such a device can and does run for years. But they are not perfect and

transformers can and do break down. Such occurrences can be nothing less than cataclysmic and must be prevented. An effective method for detecting, and hence addressing, impending failures is called turns ratio testing. A direct and useful relationship exists between the number of turns and the voltage ratio between primary and secondary. It is expressed by:

$$\frac{V_p}{V_s} = \frac{N_p}{N_s}$$

where V_p = primary voltage, V_s = secondary voltage, N_p = number of primary turns, and N_s = number of secondary turns. Standard notation designates the high-voltage winding “H” and the terminations H1 and H2. The low-voltage winding is notated “X”, with the terminations X1 and X2. The source voltage can be connected to either set of terminals, depending on whether the transformer is “step up” or “step down”. This fundamental

relationship is the basis for one of the most effective methods of testing, evaluating, and maintaining transformers in prime condition. It is called Turns Ratio Testing. In service, a plethora of causes can damage or deteriorate insulation around windings. Shorts between turns allow current to flow directly to the next turn, effectively reducing the number of turns and altering the turns ratio. Periodically measuring the turns ratio, therefore,

provides a valuable indicator of the overall health and condition of the transformer and keeps the maintenance program well informed in time to head off any serious consequences. A transformer will tolerate a limited amount of such deterioration, but it's a predictor of ultimate failure. So much so that ANSI Standard C57.12 specifies that turns ratio be within 0.5% of rating.

Direct measurement of output voltage, however, is difficult and dangerous, plus lacks the accuracy necessary to make an exacting calculation. Furthermore, disturbances to the source voltage could produce erroneous calculations. Voltage measurement for turn ratio calculation must be performed by a dedicated instrument designed with requisite performance characteristics and sensitivity. A traditional hand-cranked turns ratio tester (TTR) is a reference transformer modified to be balanced against a load (the transformer under test), measure the balanced voltages to high accuracy, and calculate the ratio. The voltage ratio at "no load" (balanced) condition is the turns ratio. To meet the ANSI standard, the tester must measure voltage to at least 0.1% accuracy, hardly attainable with a common voltmeter. Turns ratio testing is performed on de-energized transformers with the tester providing the current. The reference transformer and the IUT are connected in parallel and balanced so that there is zero circulating current and voltage, without burden on either transformer.

The traditional TTR is a fairly large piece of equipment, circa 20 pounds and carried by a shoulder strap. They are constructed for hard usage and may be powered by a hand crank. Decade knobs required the operator to manually balance the load against analog meters, an exercise that could be tedious. Test results were fairly narrow in the amount of information they provided. Modern advancements in microcircuitry have notably simplified and improved on the old, more labor-intensive routine for transformer turns ratio testing. Some old format testing will still be required for the most demanding job sites. But taking advantage of modern upgraded entries to the equipment pool can save considerable time and effort while

broadening the scope of test results with maximum accuracy, reliability and safety.

Modern Turns Ratio Testers can now be handheld instruments. They include battery-powered single-phase models that are quick and convenient to operate, up to 250 V AC with 0.05% accuracy. They can be used on single- and 3-phase distribution, power and instrument transformers for ratio, polarity and

verification. Dedicated instructions guide the operator through 3-phase setup and application so that no operator error threatens the success of the test. The operator is not required to know the test voltage, as modern instruments utilize single-phase step-up ratio technologies to overcome voltage dependence when testing large transformers. The prospect of operator error is further reduced by color-coded leads and customizable on-



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screen vectors and voltages to match the transformer's nameplate.

New built-in capabilities include convenience features like full-color displays, replacing the old analog meter guesswork. Pass/fail ratio evaluation, auto result saving, customizable vector list and asset nameplate, and simulation

mode software provide the operator with additional diagnostic help. Powered by AA NiMH batteries, a modern tester can perform up to 1000 tests on a single charge. Recharging batteries is a simple process, using built-in USB and connecting to any standard USB wall charger. Modern testers also

provide go/no-go short circuit and open circuit identification, and inductance, short circuit impedance and reactance. Additive/subtractive polarity designation and excitation current display further aid the operator in analysis, diagnosis and evaluation. Phase deviation is another valuable diagnostic and analytic tool now available.

Turns ratio testing requires high precision. A traditional challenge was associated with balancing test voltage against the leads. Modern testers now automatically apply proper test voltage against shorting connections. Safety should always be a paramount consideration and CE certification to IEC 61010 provides dependable and demonstrable assurance. A modern tester's software will perform safety checks before applying full test voltage.

In addition to their primary function of measuring turns ratio, full-featured modern testers can identify loose connections, turn-to-turn shorts, winding deformation, core problems, tap changer contact problems, and broken strands. Phase angle deviation, the phase relationship between in-phase vectors of the high side versus low side windings, advises the operator of the quality of core and winding. When the transformer is functioning properly, it should exhibit very low values ($<0.1^\circ$). Problems like shorted turns and damaged or distorted core produce recognizable changes in phase deviation values.

For 3-phase transformers, sophisticated testers can now provide phase-by-phase connection instructions on their display. Internal shorting and lead compensation mean that connection requirements for short circuit impedance tests are the same as for all other tests, meaning just one ladder climb.

Taking full advantage of 21st century developments in microcircuitry, Transformer Turns Ratio Testers can now alleviate much of the physically taxing nature of 20th century turns ratio testing while virtually eliminating the common opportunities for operator error. Results are readily stored, reproduced and transferred, making a once potentially taxing and error-prone chore a streamlined and welcome addition to critical electrical maintenance. □



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Excelling in the New Normal:

How Cabling Manufacturers Must Adapt to Succeed in the Sustainable Future

GIVEN COMMUNICATION METHODS CHANGE QUICKLY, connectivity manufacturers have always required constant innovation to meet the needs of a changing network landscape. However, this adaptive industry faces a new challenge, not only to produce new, high-quality technologies but to also meet sustainability benchmarks. Now it is crucial for companies to choose networking manufacturers who maintain both assured quality and sustainability metrics.

Network solutions manufacturers must provide a sustainable process, but assured quality in a manufacturer is essential for a company to get the highest return on infrastructure investment. In selecting a high-quality manufacturer, companies should look for some of these core qualities.

Look for quality documentation and

warranty, meaning that each product is labeled with a unique serial number for full traceability. Also, look for limited lifetime system and performance warranties. Find a manufacturer that offers technical experts either remotely or onsite at no additional charge to help with topology and infrastructure layout, along with elevations, pathways, and

specifications. A manufacturer which meets quality standards such as, ISO 9001 certification. This certification includes third-party auditing of manufacturer sites, functions, products, services, and processes.

It is key to find dedicated make-to-order facilities that can take on large orders while providing a fast turnaround. In some manufacturing environments, orders that are too large or too small may be pushed to the bottom of the production pile. Make-to-order facilities prevent this problem. A high-quality manufacturer should produce both cabling and assemblies to ensure optimum installed performance. Also, the manufacturer should keep a global supply of pre-terminated cabling options that meet cable flame rating requirements to support regional requirements.

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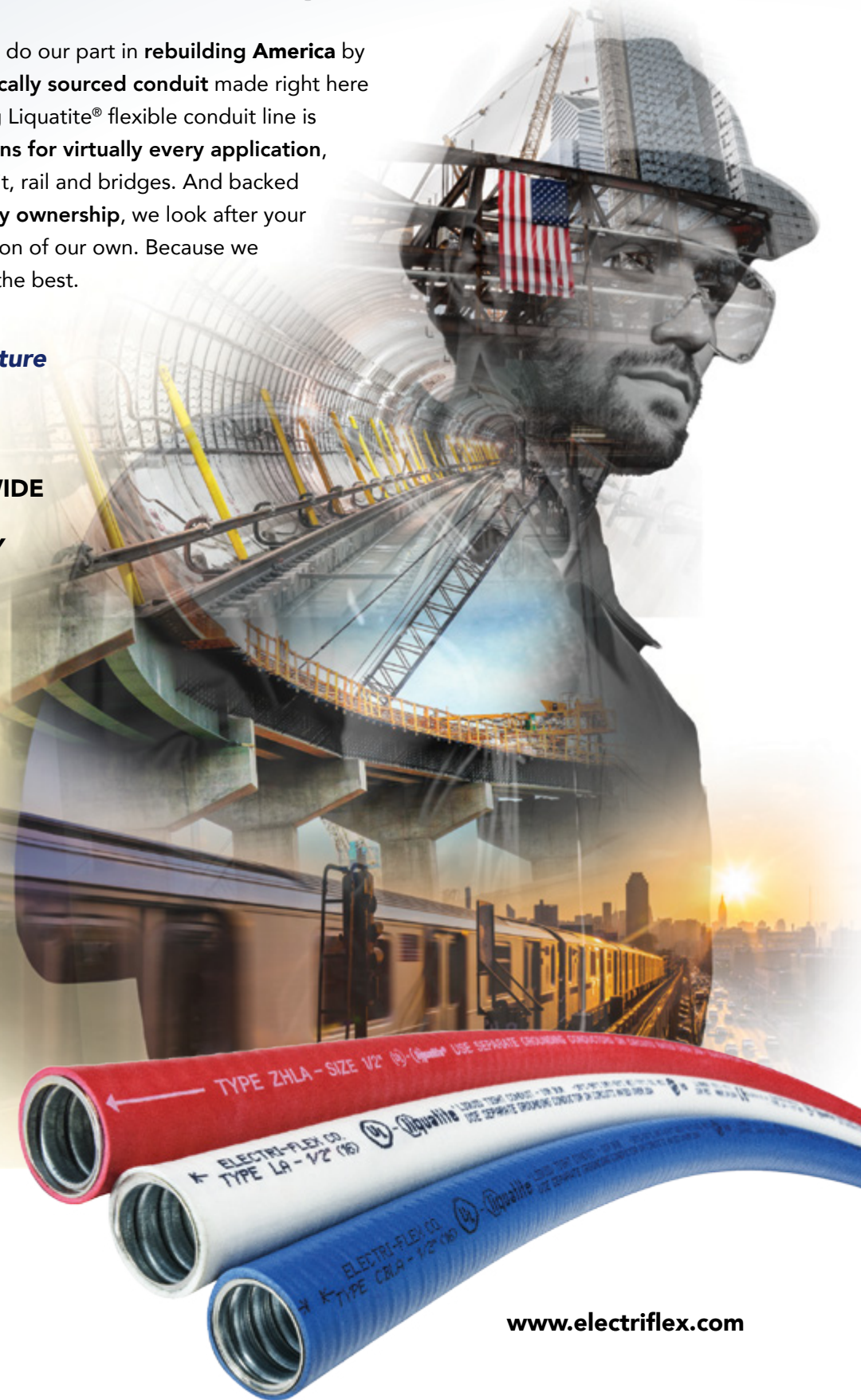
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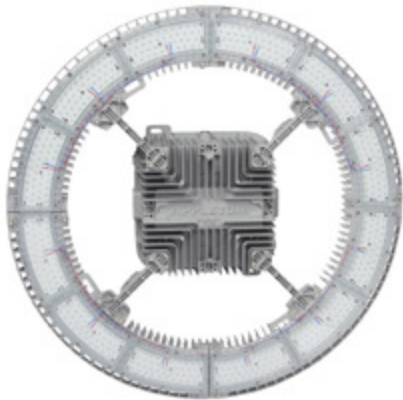
Additionally, Leviton Network Solutions is committed to protecting the environment through the design, manufacture, delivery of sustainable network infrastructure for data centers, businesses, schools, hospitals, government facilities, and commercial mixed-use markets around the world. All Leviton products are engineered to exacting standards while considering environmental impact through every step of our ISO 9001 Certified product development process, from initial material sourcing to final packaging and logistics. Leviton's primary cable and connectivity factories are certified for environmental and energy management systems. Also, the EMEA headquarters in Glenrothes, Scotland, was the first data communications factory to achieve PAS 2060 Carbon Neutrality. Through these sustainable design and manufacture practices, Leviton Network Solutions produces products that contribute to greater energy savings, less waste, and carbon footprint reduction. □

Companies and organizations should identify and utilize cabling manufacturers who are prepared to meet assured quality criteria in addition to the sustainability metrics that will make our world a better place. Leviton Network Solutions meets these standards as a single-source global manufacturer of copper and fiber cabling systems with sustainability built into its production processes.

To supply the increasing development of data centers around the world, Leviton opened new Made to Order (MTO) cells within our manufacturing facilities in Glenrothes, Scotland, and St. Petersburg, Florida. By producing and designing custom configurable pre-terminated fiber and copper cables and cassettes in the United States and the United Kingdom, Leviton has



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Electri-Flex Announces National Account Manager

ELECTRI-FLEX COMPANY announces the promotion of Tony Gigac, Regional Sales Manager, to the role of National Account Manager.

“Tony Gigac has excelled throughout his career at Electri-Flex in various sales roles,” stated Brock Klein, Director of Sales & Marketing. “Tony will bring his experience, hard work, and passion focusing on key strategic partnerships helping Electri-Flex achieve continued success.”

Tony began his career in the sales department at Electri-Flex as a sales

support assistant seven years ago and has progressed through multiple roles including Regional Sales Manager. During his time, he has covered both the central and eastern regions giving him a national perspective and a unique understanding of our partnerships. This newly created position will help Electri-Flex and our partners grow together and Tony will be an integral part of that growth.

To meet the Electri-Flex team, visit <https://www.electriflex.com/about/meet-the-team/>.



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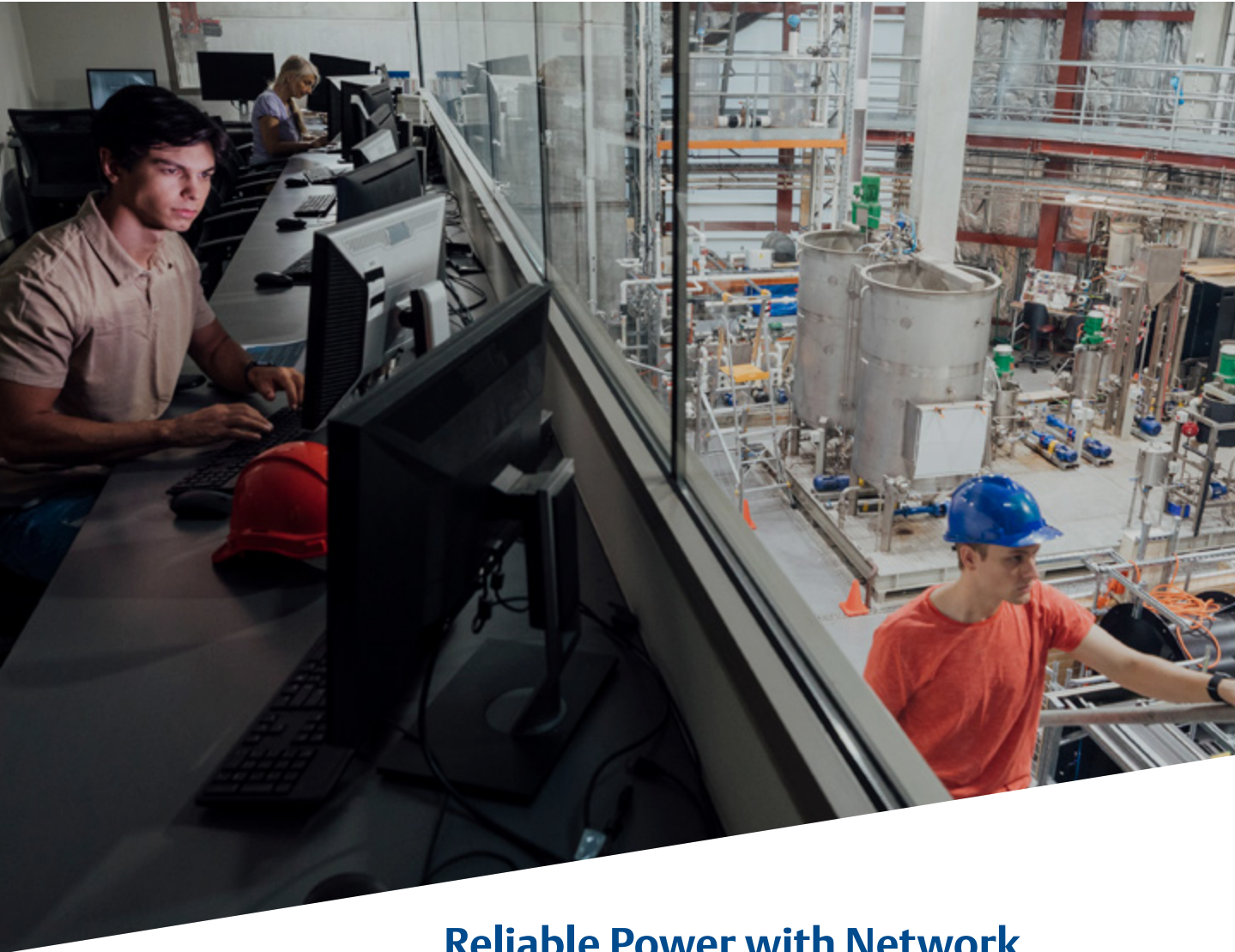
In prime power applications, engine generators are run in response to the connected load. If load increases to a predetermined level, the Russelectric Prime Power System automatically starts additional generators, synchronizes them to the generator bus, and shares the load with the running generators. If load decreases to a predetermined level, excess generators are automatically removed from the bus and shut down, returning them to automatic standby status.

For more information contact us at info@russelectric.com or 800 225-5250.



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Founded in 1955, Russelectric®, A Siemens Business, provides high-integrity power control solutions for mission critical applications in the healthcare, information technology, telecommunication, water treatment, and renewable energy markets. The company maintains vertically integrated manufacturing facilities in Massachusetts and Oklahoma, where it designs and builds a full line of automatic transfer switches, switchgear, and controls. Russelectric products carry the longest and most comprehensive warranty in the industry and are backed by a team of expert factory-direct field service engineers. To learn more about Russelectric products and the company’s commitment to customer satisfaction, visit www.russelectric.com, call (781) 749-6000, or email info@russelectric.com.



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LiteLogic has a user-friendly interface that can be programmed quickly using a smartphone. With its Bluetooth mesh network, it's a versatile lighting control solution for various environments like warehouses, offices, medical centers, schools, and auditoriums. Ideal for new construction or retrofitting existing spaces.

Marty Hall from Ardd + Winter, Inc. remarked, "Doing business with Barron is seamless and easy." With LiteLogic, Barron Lighting Group continues to demonstrate commitment to its customers by offering the latest advancements in lighting control technology.

The LiteLogic app, available on both Android and iOS, provides convenient control over the Network Lighting Control (NLC) components and features a user-friendly interface. LiteLogic is scalable and fully compatible with new and existing frameworks, ensuring energy savings and seamless integration within all types of facilities.

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Cementex, the safety tool specialists, highlights Cementex Service Tech Pack Kits, featuring Cementex double-insulated safety hand tools organized in cutting-edge storage and containment technology.

The Service Tech Kit utilizes the Veto Pro Pac® Tech Pac® to store and transport a carefully-selected combination of top-quality insulated tools. This kit includes a pack with 56 tool pockets of varying sizes and two separate storage bays. With storage pockets for a manifold gauge, hose, and cable, as well as 9 D-rings, the pack accommodates a range of tools and accessories. The pack material has been load tested to 830 pounds and features a variety of weatherproof materials, as well as adjustable padded shoulder straps.

The Super Tech Kit utilizes the CLC® 75-Pocket Tool Pack to store and transport its unique, specially designed collection of tools. Made of lightweight yet durable ballistic polyester fabric, this pack includes six zippered compartments and 75 tool pockets, sleeves, and loops.

With ample storage space for additional items, a multi-compartment plastic parts tray, and padded handles and adjustable shoulder straps, the Super Tech Kit can meet even the most demanding field needs.

As with all Cementex Tool Kits, these combinations of tools can be customized to fit an individual customer's needs. From simple additions, subtractions, or replacements to complete custom combinations, Cementex can build whatever customers need.

All Cementex products are made in the U.S.A. to the highest standards of quality.

**For more information, visit
www.cementexusa.com**



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new PRODUCTS

Optimize Your Workspace with the New DEWALT® Metal Workshop Storage System

DEWALT Customizable Metal Workshop Storage System features upgraded metal chests and cabinets and 25 workshop accessories to maximize organization

DEWALT, a Stanley Black & Decker brand and leader in total jobsite solutions, today announced the release of the DEWALT Metal Workshop Storage System, a fully integrated storage solution to organize power tools, hand tools, outdoor equipment, stick tools, power tool accessories and more. The line consists of metal tool storage chests and cabinets as well as 25 new workshop accessories (sold separately) utilizing a heavy-duty metal rail as the centerpiece of the platform.

"Organization is crucial to keeping pros productive on the job – whether on the jobsite, in the warehouse or in their personal workspaces," said Doug Redpath, President, Hand Tools, Accessories & Storage Group, Stanley Black & Decker. "The DEWALT Metal Workshop Storage System, designed with our customers in mind, is fully customizable and engineered for tough storage demands in a variety of environments."

Tool Storage Chests and Cabinets

Each chest features a DEWALT metal rail mounted inside as well as a battery rail that organizes up to four DEWALT batteries. Each cabinet has two metal rails mounted to the outside of the cabinet as well as two power tool holsters.

The chests and cabinets are built with heavy-gauge steel and feature full-extension, soft-close, ball-bearing drawers. Small drawers have a single set of slides and a max capacity of 100 lbs., while large and deep drawers are fortified with double slides that support up to 150 lbs. per drawer. Cabinets feature 6x2 in. casters with a 2,000 lb. load rating. Chests include an integrated 15-amp max load power strip with six power outlets and two USB ports for convenient charging of mobile devices and DEWALT® power tools. The drawers are designed with an internal keyed lock and are lined with anti-slip mats.

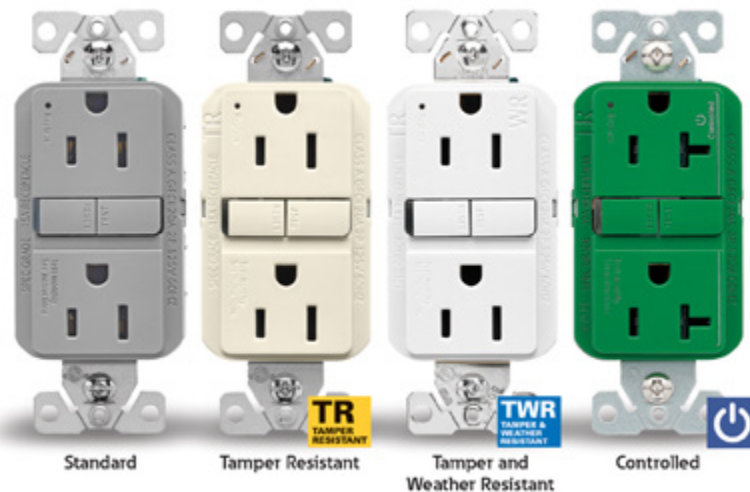
For more information, visit
www.dewalt.com

Eaton's Wiring Devices Introduces Next Generation Slim GFCI Receptacles

Featuring one of the slimmest depths on the market with updated features and a modern look, the next generation Arrow Hart Slim GFCI receptacles have been redesigned, allowing for quick, easy installation and simple intuitive use for the end user. The devices are offered in a variety of models — standard, tamper resistant (TR), tamper and weather resistant (TWR) and controlled () — and in numerous colors to meet and compliment any décor for new construction and retrofit projects.

Other features include:

- A 1.03" depth in the box provides for more room for quick and easy wiring.
- External backwire clamp allows visual confirmation of secure wire termination, increasing safety while saving installation time.
- Wider TEST/RESET buttons make it easier to test and reset.



- Intuitive large reset indicator light allows the user to easily identify a trip incident, and quickly reset the device, eliminating unnecessary call backs.
- In case of a unit failure, an end-of-life indicator light flashes red for easy identification of a device failure.
- Tamper resistant shutter system allows for easy plug insertion and are black to disappear, adding to the clean, modern look.
- Minimal top housing markings are debossed and neutrally positioned for easy reading.

Tested to the highest standards to help ensure safety, Eaton's Arrow Hart Slim GFCI Receptacles provide code-compliant protection from electrical shock in residential, commercial and industrial applications.

For more information, visit
www.Eaton.com/slingfci



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Klein Tools® Launches Newest Heat Stress Management Solution for Head Protection

Klein Tools, for professionals since 1857, introduces the Lightweight Cooling Fan for Hard Hats, designed to be a lightweight and powerful cooling solution that securely fits on all Klein Tools Hard Hats and Safety Helmets.

Lightweight Cooling Fan for Hard Hats (Cat. No. 60523)

- Compact, low profile and quiet operation allows for use in confined spaces
- Open axial fan design allows maximum airflow efficiency
- Easy mount design; no straps needed

- Up to 16-hour runtime on low; 8-hour on high for continuous all-day use
- 360° fine vent adjustment to allow you to focus airflow where needed on back of the head or neck
- Hinge design allow flip-up storage when not in use
- Independent power and mode button to control each fan
- Cable management clips to secure cable to prevent snagging
- Powered by a modular rechargeable battery (Cat. No. 29025) that can be replaced for extended runtime.
- Fits on Klein Hard Hats (Cap style, Full brim), and Safety Helmets (Type-1 and Type-2)

“Managing heat stress is a major issue on jobsites, and it starts by keeping yourself cool, especially your head area,” says Shantanu Deshpande, group product manager at Klein Tools. “Klein’s new Lightweight Cooling Fan is a one-of-a-kind portable solution that provides hours of continuous airflow in the exposed neck and head side area. The modular system’s compact and lightweight design allows use in tight spaces or in wide exposed areas to allow use in multiple applications and environments.”

For more information, visit
www.kleintools.com/new-products



Milwaukee's Made in the USA Cutting Pliers

Hand Tools play an essential role in a professional electrician's daily efficiency, safety, and productivity, helping them accomplish many of their foundational tasks around the jobsite. These tools receive extensive use throughout an electrician's career, driving the importance of quality and reliability in a professional's hand tool investment. Tools such as pliers, wire strippers, and crimpers are all basic hand tools electricians have used for decades. Despite the heavy use and high demands of these products, many of these solutions have seen little innovation over time. However, some manufacturers have worked to integrate continuing technology with certain advancements and improvements in design and manufacturing to make some of today's hand tools more versatile, easier to use, and more durable. These updates start with a focus on electricians, learning about their challenges and needs.

Spending countless hours in the field conducting research alongside professionals, Milwaukee® has worked to reinvent traditional hand tools to bring best-in-class solutions back to users. While these solutions may look the same,

significant time investments have been made to truly understand problems with existing solutions, take user feedback, and create a better solution. Through this investment, the common pain points and frustrations shared among professionals were factored into the product development process to guarantee Milwaukee's new cutting solutions would fit a user's needs and outlast the demands of a jobsite.

Performance and Durability

More and more is being demanded from electricians. To keep up with these growing demands, more is required of their tools in both performance and durability. Professional users need tools that offer improved performance to make their work easier and safer. More durable tools allow users to stay on the job rather than having to track down a replacement for a damaged or broken tool. Purchasing durable hand tools from a trusted manufacturer ensures professionals can stay efficient and productive on the job.

For more information, visit
www.milwaukeetool.com



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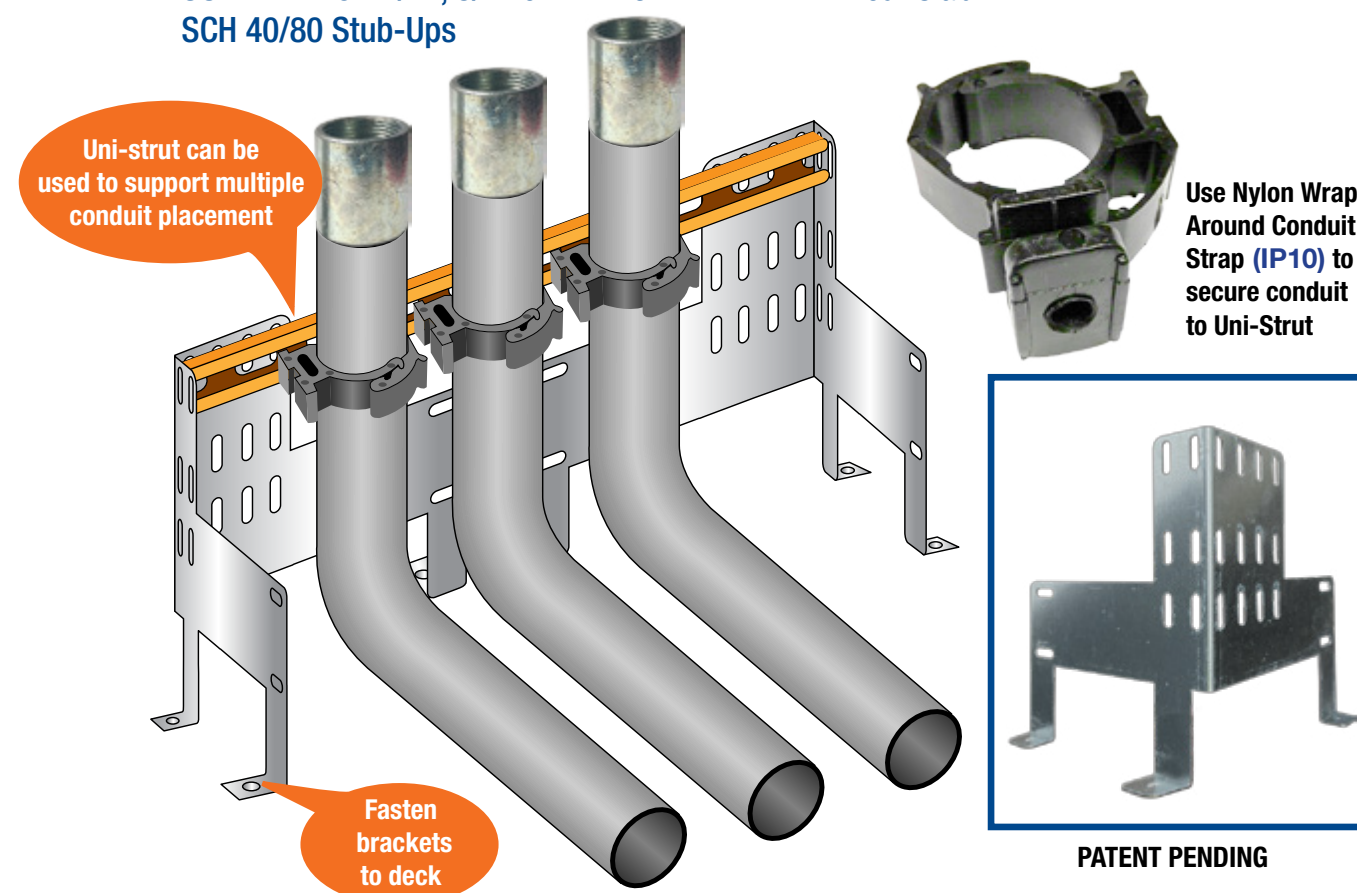


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- Use nylon wrap around conduit straps, minerllacs, one-hole straps or Ty wraps to secure conduit to bracket or uni-strut
- 16 guage galvanized steel
- SUITABLE FOR 1/2", 3/4" or 1" PVC SCH 40/80 Stub-Ups

INSTALLATION:

1. Position bracket on deck before the concrete pour
2. Fasten bracket to deck
3. Secure conduit to bracket or uni-strut with nylon wrap around conduit straps, minerllacs, one-hole straps or Ty wraps
4. Pour slab



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new
PRODUCTS

Leviton Announces Dual Type A and Type-C with Power Delivery USB Charger Receptacle

The new receptacle offers a combined total of 60W of charging power for high-speed charging

Leviton, a leading provider of wireless smart home technology and electrical wiring devices, today announced its 60W Dual Type A and Type-C with Power Delivery (PD) USB Charger Receptacle, available in 15A and 20A models. The device delivers up to 50 watts of power on its single Type-C port and offers up to 2X the charging power when paired with PD-enabled devices for high-speed, efficient charging.

“Power Delivery supplies a higher level of power than standard charging offers. As a leader in electrical innovation, Leviton is expertly positioned to bring this technology to our customers to meet their evolving charging needs for both home and business,” said William Randall, director of product management, Leviton Residential. “Leviton USB Chargers with Power Delivery are the safe and reliable choice for efficiently charging devices with higher power requirements.”

The Dual Type A and Type-C with Power Delivery USB Charger Receptacle features smart chip technology which recognizes and optimizes charging of the connected device. Built-in overcurrent protection helps protect electronics from receiving too much power, which can damage them, and an internal thermo regulator prevents electronics from overheating for safe, reliable performance. With 60 watts of total power, the receptacle offers the ideal solution for charging PD-enabled smartphones – including the new iPhone® 15, tablets, laptops, and more, as well as Type A devices.

With its shallow profile, the Dual Type A and Type-C with Power Delivery USB Charger Receptacle easily replaces a standard receptacle for a convenient and powerful upgrade. Its USB ports are tested to meet the industry requirement to withstand over 10,000 insertions and the receptacles are tamper-resistant to help prevent access by most non-rated or foreign objects. It is compatible with USB 3.1, 3.0, 2.0 and 1.1 devices.



For more information, visit
www.leviton.com/usb



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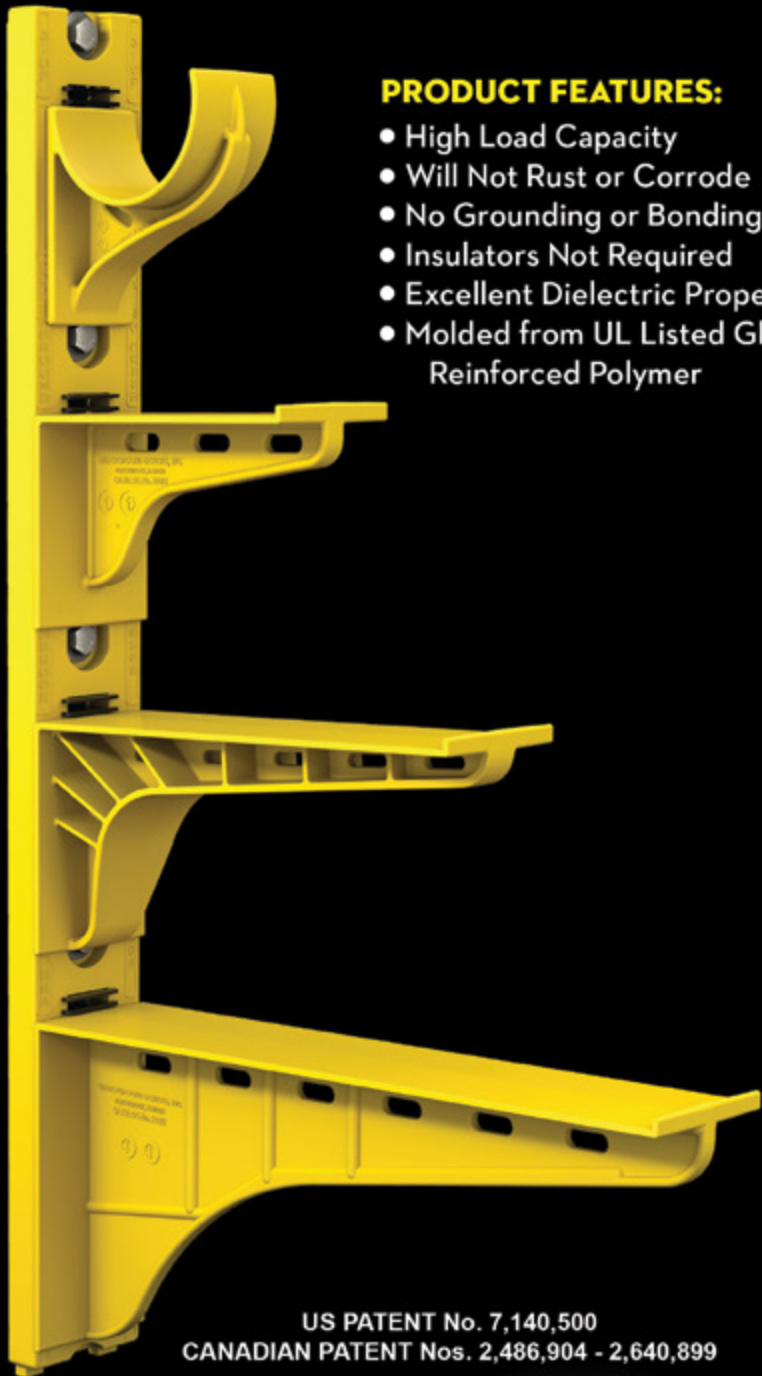
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- Excellent Dielectric Properties
- Molded from UL Listed Glass Reinforced Polymer



US PATENT No. 7,140,500
CANADIAN PATENT Nos. 2,486,904 - 2,640,899



HDL Arm Lock shown with
RA04 Arm and CR36-B Stanchion



3HDS - 3" throat saddle shown with
a cable secured by cable ties.



RA08 - 8" arm shown with three
cables secured by cable ties.

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IP5

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Enter Any KO on Both Sides of the Box



IP19/20

4-Conduit Block
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IP21a

QwikBlock
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Use 4-Conduit Block (IP19 or IP20) with QwikBlock (IP21a)

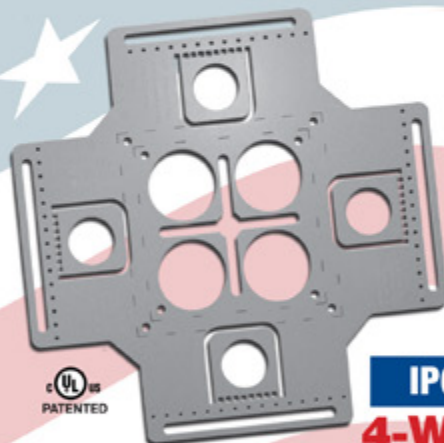
IP6d

2-Way

with Split Fingers for Horizontal or Vertical Installation



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IP6

4-Way

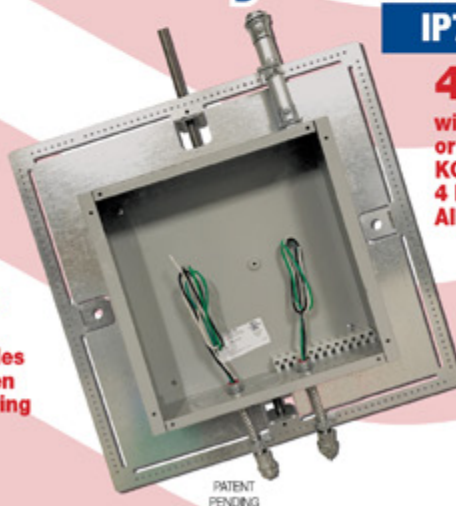
Enter Any KO on All 4 Sides of the Box Plus 4 Large Open KOs in Center Allows Entering Back of Box



IP6a

2-Way/Half

Enter Any KO on 1 or 2 Sides of the Box Plus Large Open KOs in Center Allows Entering Back of Box



PATENT PENDING

IP7

4-Way

with Split Fingers for Horizontal or Vertical Installation. Enter Any KO on All 4 Sides of the Box Plus 4 Large Open KOs in Center Allows Entering Back of Box.

IP8

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