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A Leader in Arc Flash Protection

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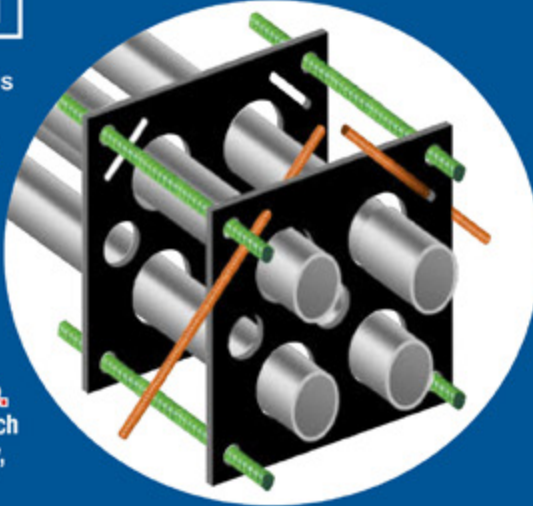
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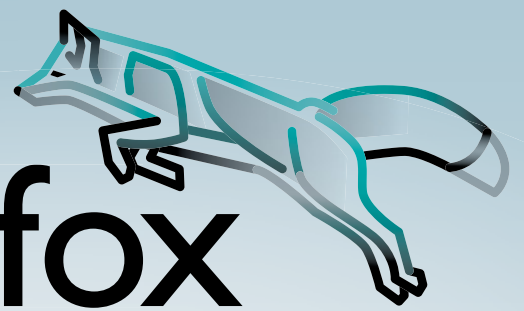


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Miller Safety Consultants — A Leader in Arc Flash Protection

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
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Common Power Quality Disturbances in Metals and Mining Facilities

No other industry places more demands on electrical power distribution systems than mining

By Kyle McLeod, Product Marketing Manager, Emerson, and Rebecca Papp, Regional Sales Manager-Power Quality, Emerson

IN ANY MINING OPERATION, the facility's infrastructure relies heavily on electric power. However, mining's harsh conditions, non-linear loads, extensive use of long cables for mobile equipment, complex grounding, and the adoption of ever larger machinery with higher power requirements all challenge the reliability of the power mines depend on to keep operations running 24/7, 365 days a year.

This article will address power reliability in mines and specifically, the increased total cost of operations related to power quality issues. We will explain the four types of power quality disturbances mines commonly experience. Identifying power quality problems is the first step towards developing mitigation tactics that can improve a mine's safety, reliability, productivity, and cost efficiency.

Power quality is critical in mining, since even short interruptions can lead to equipment damage and production losses costing hundreds of thousands of dollars per hour. Besides downtime, poor power quality can pose safety hazards to workers, especially those underground or in confined spaces. Without reliable power, ventilation and lighting systems may fail or

malfunction, making it difficult for workers to see or breathe while levels of combustible gases and dusts increase.

Mining Power Systems

Mines consume tremendous amounts of power, as much as 120 megawatts per 100,000 tons of mined product each day. (4) To get a better idea of power demand, consider the variety of electrical equipment and the different types of loads in mines. In underground mines, the power system must supply locomotives, drills, shearers, crushers, loading machines, belt and shuttle conveyors, roof bolting machines, hoists, chillers, ventilation systems, and pumps. In surface mining, there are power-hungry rope shovels, drills, and excavators. Extracted materials transported to processing plants



encounter large crushers, grinding rolls, semi-autogenous grinding (SAG) and ball mills, and exhaust and dryer combustion fans. Understanding the diverse nature and complexity of mining equipment sheds light on why power quality problems are so common.

Mines generate electric power from a variety of sources, sometimes resulting in a patchwork system. When AC grid access first became available, operators began purchasing much of their electrical power from utility plants. High voltage DC power remains in use, mainly for electric rope shovels, uninterruptible power supplies (UPS), and emergency systems, supplied by AC-to-DC conversion or by onsite DC microgrids. Fuel-driven generator sets (gensets) are also commonly used, as are gas fired boilers and renewable energy sources.

When it comes to sourcing power, utilities offer mine operators two major advantages over gensets. First, they do not require the storage and transportation of flammable fuels

over many miles of harsh road and terrain. Second, utilities can respond more effectively to load variations beyond the capacity of local generation options which have less capacity and are prone to significant fluctuations in voltage and frequency. Incidences of voltage variation and power outages are more frequent in the mining industry than in most other industries, largely because mines are typically located in remote areas far away from population centers and existing electrical grids. Transmitting electricity over long distances to a mine can result in power loss, voltage drop, interference, and weather-related outages from high winds, lightning strikes, or ice storms. Utility supply switching (breakers, contactors, or taps) can also give rise to damaging voltage surges.

Power systems in mining operations vary greatly but in general, they will follow a basic design: high voltage power coming off the electric grid feeds high voltage transformers that supply a main substation. In turn, the main

substation distributes energy to multiple secondary substations as well as directly to the mine's largest motor loads. Secondary substations supply power to medium voltage loads and to medium voltage/low voltage transformers that connect to motor control centers. At any stage in this distribution there are power quality threats that can enter the system.

Internal Power Disturbances

While the first inclination of some mine operators is to blame the utility for power quality issues, that view is frequently inaccurate. It's more common that power quality problems arise from dynamic conditions within the mining facility, manifesting in the form of overvoltage swells, undervoltage sags, harmonic distortion, or total power interruption.

All mine power systems face the challenges of poor power quality. The costly consequences range across operational interruptions, lost data, damaged equipment, and energy inefficiency, to utility fines, reduced productivity, and even worker

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safety. Due to a mine power system’s complexity, a single power quality solution is rarely adequate to ensure reliable power. The variability of power disturbances therefore requires a multi-tiered approach that often starts by identifying power-offending devices, such as drives, motors, and pumps.

The digital age has come to mining and it brought with it new power quality challenges. Over the past twenty years, the mining industry has implemented more and more automation control within processes. Most of the sophisticated electronics being installed are highly sensitive to power quality disturbances, much more so than traditional machinery. Digital equipment requires protection using tracking filters, surge protective and power conversion products, including K-Factor and Drive Isolation Transformers. Last, but not least, all control panel points should employ surge protection devices.¹

Common Power Quality Disturbances in Mines

1. Voltage Sags and Undervoltage

Voltage sags and extended undervoltage conditions are the most common power quality disturbances in underground longwall mining. They occur when a large increase in load current stresses the electrical supply system, causing the supply voltage to drop below levels at which equipment is designed to operate. Voltage sag, as defined by IEEE, is a reduction in voltage for a short time. The voltage reduction magnitude is between 10% and 90% of the normal root mean square (RMS) voltage at 60 Hz. The duration of a voltage sag event, by definition, is less than 1 min and more than 8 msec, or a half cycle of 60-Hz electrical power. (2) Undervoltage events are similar to voltage sags but extend over one minute.

In mines, the underlying causes of sags and undervoltage may include the start-up of high-power motors, transformer inrush, ground faults, short circuits, or tripping and reclosing circuit breakers. Contributing factors may include the long cables commonly used for mobile equipment, and the incorrect



specification of transformers.

Both sags and undervoltage may cause nuisance tripping of breakers, equipment malfunction and shutdown, or premature equipment failure. Operation at reduced voltage will increase heating effects at high-resistance connections, elevating the risk of combustion or explosion in classified areas. Signs of these issues include dimmed or flickering lights, poorly operating HVAC units, and motors running hot. PLCs, automation control systems, and computers may

lock up or power down, resulting in lost data, increased production costs, and a greater probability of equipment failure.

2. Overvoltage/Swells

Overvoltage and voltage swells are also be known as transients, spikes, or impulses. The control of overvoltages is critical to maintaining mine uptime. An overvoltage condition may occur by accidental contact of equipment with a higher voltage system, or from transient phenomena due to



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lightning strikes, intermittent ground faults, autotransformer connections, or switching surges. The maximum ratings for cable insulation, transformer windings, relay contactors, and so forth may be temporarily exceeded in these cases. This does not usually result in an immediate breakdown of equipment, but component parts of the electrical system are successively overstressed and weakened by repeated exposure. This leads to premature failures, reduced component life, and mysterious “nuisance trips,” which can occur without apparent reason.¹

One of the serious consequences of overvoltage is insulation degradation. Deteriorating insulation jeopardizes the safe operation of the entire mine power system. Weakened or failed insulation can serve as a catalyst for electric faults, power outages, fires, and the explosion of methane and coal dust. Insulation is designed for its safe maximum applied voltage along with a transient overvoltage rating indicating the peak voltage it can withstand. If regularly subjected to above peak voltage, insulation will progressively weaken until it fails, resulting in a line-to-ground or line-to-line fault. Weakened insulation in a portable mining cable represents a safety hazard since the insulation appears to be functional when a lethal potential may exist on its surface.

3. Harmonics

Harmonics refer to voltages or currents having frequencies that are integer multiples of the frequency at which the supply system is designed to operate. Harmonics combine with the fundamental voltage or current and produce waveform distortion. Harmonic distortion exists due to the nonlinear characteristics of devices — such as Variable Speed Drives (VSD) — and loads on the power system (3). Harmonics can lead to increased heating in equipment and conductors, misfiring of VSDs, and torque pulsations in motors. Other symptoms of harmonic distortion in a mining power system are interference in the mine’s communication system, flickering lights, tripped breakers, and even loosened electrical connections.



The vast majority of the loads in a mine are electric motors, most of which today feature non-linear VSDs, making VSDs the main source of harmonics in a mining operation. Standard 3-phase power VSDs have a full wave rectifier that improves motor efficiency but that generates considerable harmonics.

4. Total Power Interruption

In remote areas of the world, local utility grids may struggle with the capacity to reliably support the power demands of a modern mine. Weather can wreak havoc on long suspended power lines supplying a mine. Gensets can fail, as can microgrids, leaving a mine in the dark.

In the event of a total power disruption all mining production comes to a halt. Safety standards require emergency diesel generators to be on-site to supply power to critical loads in case of blackouts, ensuring that mine workers can safely evacuate the mine.

Electrical equipment is another story. If left unprotected, the lifespan for even the most rugged machinery will be shortened as the result of a sudden power interruptions. Blackouts are especially devastating to devices where normal shut down sequences are critical. Sudden power loss for computer-based equipment, such PLCs, automation systems, and industrial robots can result

in corrupt files, lost data, and possible damage to the operating systems. When this type of equipment is brought back online, the operating system may fail to boot, or critical operational data may be lost. Furthermore, the physical lifespan of the equipment can be reduced by frequent power losses.

Conclusion

Applying a multi-tier power quality and protection strategy has proven to lower mining costs, minimize hazards, and extend equipment longevity, helping to ensure that operations remain profitable and sustainable over time. Mining equipment has greater power requirements than ever before. These increased and varied loads have come at the same time as the adoption of sensitive electronics in mines for automation. The increased number of devices drawing power from the utility grid has led to greater dependency on the level of power quality required in today’s highly competitive, efficiency-driven mining industry. □

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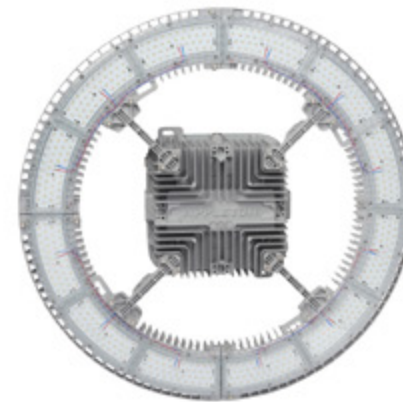
¹ Mine Power Systems, Lloyd A. Morley, January 1990
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Appleton traces its roots back to the dawn of the electrical age in America. The Appleton Electric Company was founded by Albert Ivar Appleton, an entrepreneur and recent immigrant to the United States, who traveled by horseback to sell his Unilet® conduit bodies and boxes through the streets of Chicago. By 1947, Albert's two-employee office had been replaced by modern facilities boasting more than one million square feet of manufacturing and warehousing space.

That same year, Albert Appleton turned over the reins of the Appleton Electric Company to his son, Arthur, who would lead the company into a period of unprecedented expansion. It was Arthur Appleton who, in the early 1960s, shifted the company's product focus towards the fledgling hazardous location marketplace. Through continuous innovation, hard work, and an aggressive network of 1,200 distributors, Appleton leapfrogged into the number one ranking worldwide in several key categories of that product arena.



During his tenure Arthur Appleton contributed many inventions to the electrical field, acquiring more than 160 patents still in use today. Upon his retirement in 1982, the Appleton Electric Company was sold to Emerson Electric with its headquarters later moved from Chicago to Rosemont, Illinois. In the ensuing years, Arthur Appleton devoted a significant portion of his time to charitable causes, notably the establishment of the Appleton Museum of Art in Ocala, Florida.

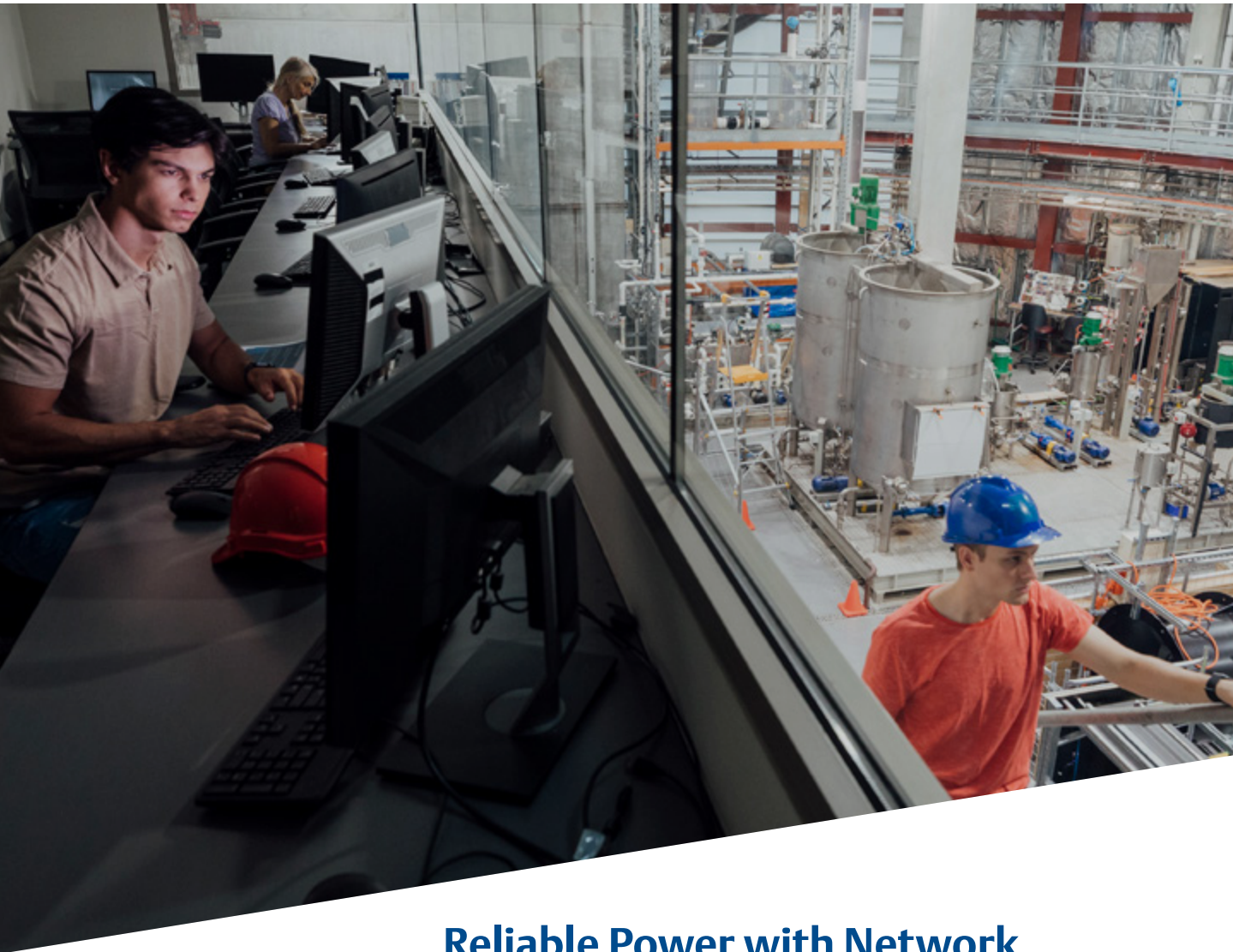
Appleton was energized by becoming a member of the Emerson portfolio of global brands. In 1997, it joined forces with OZ-Gedney, SolaHD, and Nelson to better provide industry-wide electrical solutions. To fulfill the rising demand for residential and commercial heating cables, Appleton purchased EasyHeat in 1998. In 2003, it expanded internationally into the IEC and ATEX markets with the acquisition of ATX, based in Amiens, France. Appleton can now supply a global portfolio of top-quality electrical solutions that enable defense against severe industrial conditions and dust, fumes, and gas in hazardous situations as one brand under Emerson.

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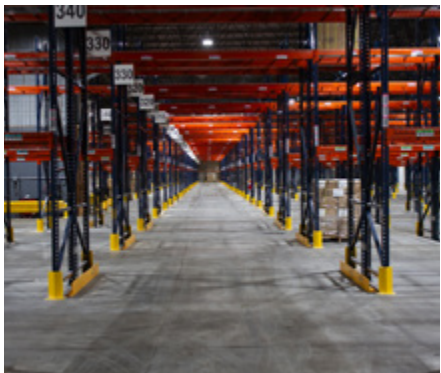
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The SDU DC - B UPS combines an industry leading compact design, wide operation temperature range -15 °C to +50 °C (+5 °F to +122 °F), enhanced communication and unique installation options to solve common application problems.

Learn more at: www.solahd.com

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CONSIDER IT SOLVED™

DMF Lighting Launches New DALI Controlled Light Modules

Offering the custom integrator channel digital control for LED fixtures CARSON, Calif. — Aug. 30, 2023 — DMF Lighting, the leader in modular downlighting in the custom integration channel, today announced the launch of its new DALI controlled modules, offering the custom integration channel DALI-2 digital control protocols for LED fixtures. The advanced light modules have a DALI-enabled integrated driver that provides flicker-free dimming down to 0.1% and easier installation, thanks to their compatibility with DMF's existing modular system and their use of Near Field Communication (NFC) technology.

"The DMF modules with digital control offer a more compelling solution by providing even more installation options for the CI channel," said Mike Libman, National Sales Director, Residential Systems, DMF Lighting. "With NFC technology, pre-deployment, deployment, and maintenance are greatly simplified and managed via an app on your cell phone. Tasks that would take hours can be completed in minutes."

Everything you appreciate about DMF's modular platform is now available with digital control. Troubleshooting and maintenance are easy. Users can simply replace the complete module as opposed to a separate driver and LED with wiring and connections. Using the DMF app, configuration and programming are done with NFC and do not require modules to be powered.

The digital modules provide integrators with increased flexibility to deliver multiple light settings to address a homeowner's different use cases. Integrators can manage color temperature and intensity independently and tailor scenes to enhance the space.

The digital modules will be adopted across the DMF iX and DID Series and will be shipping in the fourth quarter of 2023. They will be on display at CEDIA Expo 2023 at the DMF Lighting booth 4112, as well as the Crestron booth 1901 and Legrand | AV booth 1506.



For more information, visit
www.dmfluxury.com



Gray Tools Introduces Made-in-USA Insulated Socket Sets

Gray Tools offers two new insulated socket sets, available in 1/4" and 3/8" drive sizes. Made in the USA, each set contains a 42-tooth round head ratchet with two extensions and a variety of SAE and metric sockets. Each piece is individually insulated to 1,000 volts and tested to 10,000 volts in compliance with ASTM F1505 standards.

The 25-piece 1/4" drive set (part no. 15025-I) includes 12-point SAE sockets ranging from 3/16" to 9/16" and 6-point metric sockets from 4mm to 15mm. The 24-piece 3/8" drive set (part no. 25024DH-I) includes 12-point SAE sockets from 3/8" to 7/8" and 12-point metric sockets from 8mm to 19mm.

The pieces are neatly stored in a dual-color foam organizer with imprinted size markings on the top layer for quick identification. They are contained in a light, yet durable carrying case with metal latches that is convenient for either storage in a toolbox drawer or transport to a jobsite.

Every piece in the set undergoes a rigorous multi-step insulation process to meet compliance and ensure quality. When the process is completed, each tool is charged with 10,000 volts of energy for 180 seconds to ensure its insulation resists potential electric shock. Other tests are performed to verify the flame resistance and durability of the insulating material.

In addition to providing protection for up to 1,000 volts, a dual-colored insulation serves as a visual safety indicator. If the outer orange layer of insulation becomes damaged, an inner yellow layer alerts the user that the tool

is no longer safe for use.

"The insulated socket sets are a natural extension of Gray's growing insulated tool offering. Beyond serving the electric vehicle market, these tools are valuable to some of our company's traditional market segments, including industrial, mining and natural resources for servicing electric drills, conveyors, belts and pullers, in addition to electric trucks and loaders, which are becoming more prevalent. Gray is committed to supporting this transition with one of the most complete selections of insulated tools, backed by our expert tool knowledge and support," said Dragos Baicoianu, Marketing Manager, Brand and Digital.

For more information, visit
www.shopdynamictools.com

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new
PRODUCTS

Klein Tools® Launches New Line of Work Gloves with Superior Grip and Durability

Klein Tools, for professionals since 1857, introduces new Heavy Duty Gloves, with superior grip and durability, and touchscreen-capable fingertips to keep you connected and protected.

Heavy Duty Gloves (Cat. Nos. 60598, 60599, 60600, 60601)

- Touchscreen capable fingertip fabric to keep you protected and connected
- Soft suede palm for durability
- TPR back of hand, D30® palm padding and abrasion resistant palm patch for added protection
- Hook and loop wrist strap and strong TPR pull tab for easy on and off
- Spandex back of hand fabric
- Breathable, comfortable work gloves designed for everyday tasks
- Machine washable
- Available in sizes Small (60598), Medium (60599), Large (60600) and Extra-Large (60601)

“In designing our new lineup of work gloves, we wanted to cover all the bases in terms of what trade professionals might need,” says Kelly Baten, product manager at Klein Tools. “The Heavy Duty Gloves provide superior grip and durability to keep you connected and protected. The gloves also feature a TPR back of hand, D30® palm padding and abrasion resistant palm patch for added protection.”

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



Leviton Introduces New Decora® Countdown Timer Switches

Full line of 15A and 20A models offer unique features and support for larger loads



Leviton recently announced the introduction of its new line of Decora Countdown Timer Switches. The line consists of eleven models in total, including 15A models featuring the company's new Green Flex Sleeve for easy wiring to ground or neutral wires, and 20A models that can be used in single pole, multi-way or multi-timer applications and support higher load ratings.

“Our new Decora Countdown Timer Switches add convenience and security to homes and small commercial environments by providing reliable timed control of lighting and motor loads,” said Tom Babich, product manager, lighting controls, at Leviton. “This new line of timer solutions offers an easy upgrade to traditional switches and provides an ideal way to help manage energy costs.”

The new 15A models feature Leviton's innovative Green Flex Sleeve Wire, which provides the option to connect to ground in homes without a neutral wire; or remove the green sleeve and connect to the neutral wire, if available. Additionally, the line and load wires are interchangeable to help reduce miswiring during the installation process, making these devices DIY friendly. The 15A models

are available in six time setting options including 15-, 30- and 60- minute and 2-, 4- and 12-hour settings.

Leviton's new 20A countdown timer models support larger loads and are the only countdown timers currently on the market that can be used for 3-way and multi-way applications as well as applications using multiple timers, where two 20A timers can be used to control the same load. These models are available in five time setting options: 30- and 60- minute and 2-, 4- and 12-hour settings. A neutral wire is required for installation.

Both the 15A and 20A models have a shallow depth of less than one inch for easier installation, an intuitive user interface with large, labeled buttons and a separate off switch. They are rated for and compatible with LED loads as well as CFL, Incandescent, Halogen, Magnetic Low Voltage, Fluorescent and Motor loads.

Decora Countdown Timer Switches are ideal for porch and landscape lighting, interior lights, bathroom exhaust fans, heat lamps, pool pumps, hot tubs, saunas, attic fans, small closets, garages, basements and more.

The Leviton Decora Countdown Timer Switches coordinate with the Leviton line of Decora devices and are compatible with Decora and Decora Plus™ screwless wallplates. Additional faceplate colors are available in white, ivory, light almond, gray, black and brown to complement any décor without having to replace the device. Decora Countdown Timer Switches are backed by a limited 5-year warranty.

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

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RONK Electrical Industries has been manufacturing and serving agricultural and commercial industries with high-quality electrical products for over 70 years. Our goal is to produce first-rate products that increase efficiency, stabilize power usage, and last for decades. RONK is proud to have a team of experts, knowledgeable in the electrical industry. The RONK product family of transfer switches, phase converters, stray voltage isolators, power factor capacitors, meter socket circuit breaker units, and now a full line of docking stations is a testament to our commitment to meeting our customers' needs.

RONK is pleased to manufacture the Powertron line of docking stations, featuring multiple options from the basic Contractor series, Standard series, MTS series, and the fully protected Breaker series designs. These units come in NEMA 12 and 4X enclosures, and offer color-coded series 16 cam locks, as well as options for GFCI, phase rotation meter, and a manual switching contactor.

In addition to the Powertron docking station products, RONK Electrical also offers heavy-duty contactor-rated Series 4 and Series 4+ NEMA 4/12 transfer switches, as well as the NEMA 4/12 automatic transfer switches, or ATS's.

All of RONK's products are designed, built, and assembled in Nokomis, Illinois; RONK's proven history of reliability, integrity, and responsibility shows our desire to meet all of your emergency-ready power needs.

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100-1200 AMP



Align, Crimp, Repeat: Milwaukee® Provides the Fastest Way to Crimp

Milwaukee Tool introduces the fastest, most productive 12-ton Kearney-style crimper with the latest addition to their growing crimper lineup. With speed and unmatched reliability, their new M18™ FORCE LOGIC™ 12T Kearney Linear Crimper is the fastest way to crimp, with fully enclosed high-speed hydraulics.

The 12-ton crimper's linear design provides linemen with an optimized center grip for ideal balance and maximum control. The crimper can be used one-handed, freeing the user's other hand and allowing them to complete the crimp in fewer steps. A 340° head rotation allows the crimper to be set up in multiple orientations and in a variety of spaces, such as transformers, substations, and overhead applications. Designed for both left and right-handed users, the crimper's enlarged trigger and electronic release button enable quick activation, even while wearing Class 3 gloves. Compatible with all industry-standard Kearney dies, the battery-powered crimper has a pull-pin die retention system for fast, tool-less die changes.

To ensure a full crimp can be completed, a pre-crimp battery check automatically confirms the battery has enough charge. Milwaukee's Predictive Force Monitoring (PFM™) constantly measures the linear crimper's output force, delivering the fastest crimp speeds across all connector types and sizes, including stirrups, tension splices, H-taps, and C-taps. PFM™ technology ensures full pressure is reached during every crimp cycle and a green crimp indicator LED verifies full pressure was reached by the user.



For more information, visit
www.milwaukeetool.com

Ruselectric, a Siemens Business, Highlights RTSCD Commercial Duty Service Entrance Rated Transfer Switches

Cost-effective service entrance option with Ruselectric quality and reliability

Ruselectric, A Siemens Business, a leading manufacturer of power control systems and automatic transfer switches, announces its new RTSCD-SE Commercial Duty Service Entrance Transfer Switches, a cost-effective option ideal for commercial spaces. Industrial plants and manufacturing facilities can rely on the RTSCD-SE to combine automatic power switching with the necessary disconnecting, grounding, and bonding required for use as service entrance equipment.

Built to the same exacting standards around reliability and ease of operation for which Ruselectric is well known throughout the industry, RTSCD-SE offers

a superior product at an attractive price point.

The RTSCD-SE transfer switches incorporate a user-friendly operator interface panel that features a keypad with text and icons and comes standard with an historical event log. The product is available in 2, 3 and 4 pole models, with solid or fully rated switched neutral. Featuring rapid and reliable arc quenching, the front connected RTSCD-SE offers manual transfer with rapid arc interruption, as well as a permanently affixed manual handle and mechanically held contactor. Contacts are easily accessible for convenient inspection.

Like all Ruselectric transfer switches, the RTSCD-SE switches feature preloaded springs and electric operator-driven over-center mechanism that result in extremely quick switching operation. This unique design instantaneously opens and closes the contacts, providing rapid full arc interruption, even under maximum voltage and amperage. This design considerably reduces contact erosion and effectively increases the switch's useful life.

The RTSCD-SE switches meet UL1008 up to 480 (VAC) and comply with NFPA 110, NEC Articles 700, 701, 702, Enclosure UL Type 1 and IBC 2018 and CBC2019 seismic standards.

Optional accessories include a power monitoring package, auto/load test key switch and load shed relay, selector switch for auto/manual, pushbuttons for manual transfer, and a space heater/thermostat.

For more information, visit:
www.siemens.com

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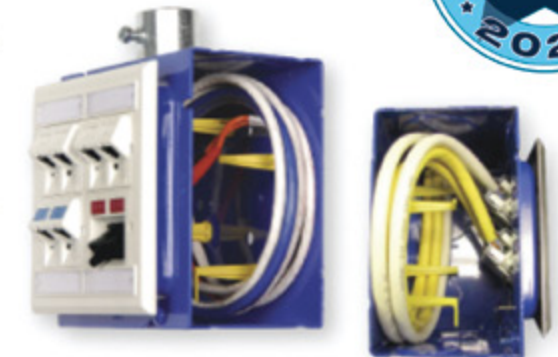


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Transition Couplings PVC Bell End Adapter Galvanized Rigid Conduit



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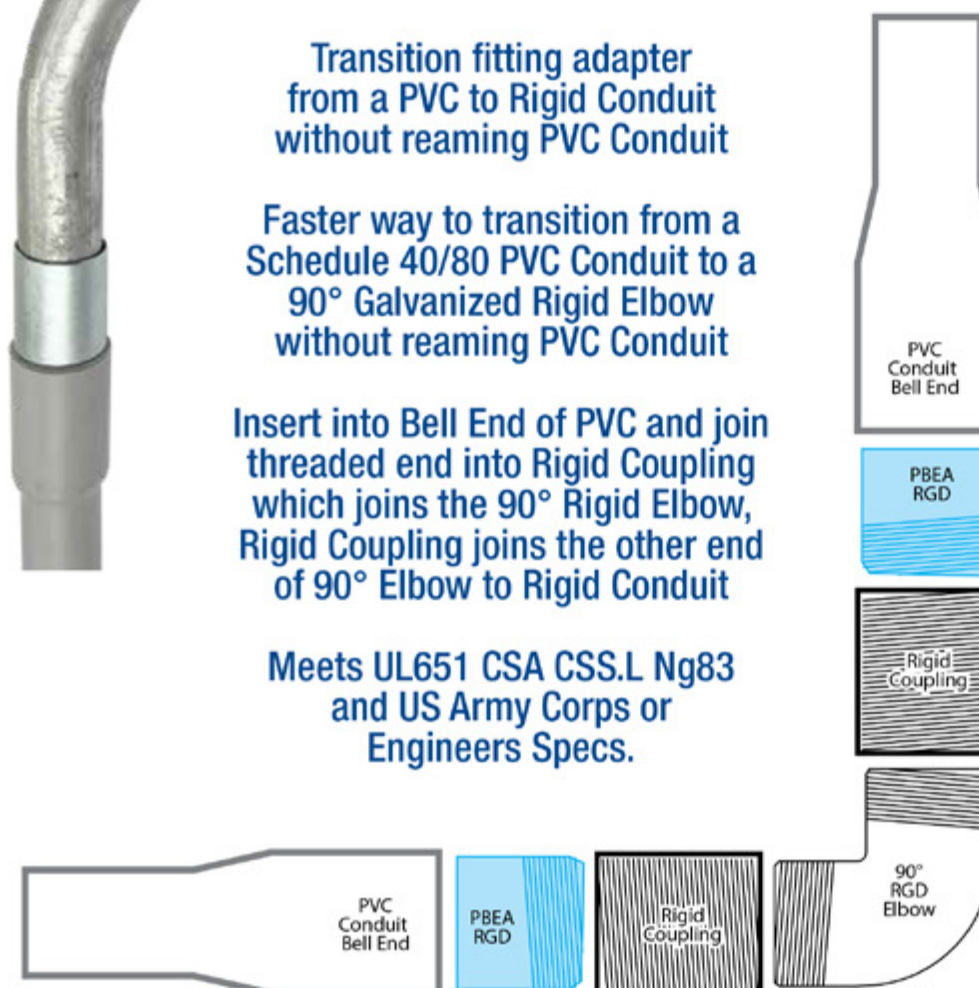
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which joins the 90° Rigid Elbow,
Rigid Coupling joins the other end
of 90° Elbow to Rigid Conduit

Meets UL651 CSA CSS.L Ng83
and US Army Corps or
Engineers Specs.



Transition Couplings

Size	Catalog #
1/2"	PBEA/RGD 50
3/4"	PBEA/RGD 75
1"	PBEA/RGD 100
1-1/4"	PBEA/RGD 125
1 1/2"	PBEA/RGD 150
2"	PBEA/RGD 200
2-1/2"	PBEA/RGD 250
3"	PBEA/RGD 300
3-1/2"	PBEA/RGD 350
4"	PBEA/RGD 400
5"	PBEA/RGD 500
6"	PBEA/RGD 600

Customer must satisfy all codes and owners' specifications.

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IP13r

Klein Tools® Introduces New Slotted Impact Socket Set with Most Commonly Used Sizes

Klein Tools, for professionals since 1857, introduces a new 6-Piece 2-in-1 Slotted Impact Socket Set, with the most common impact socket sizes in one convenient case, making it ideal for utility, electrical and construction work.

2-in-1 Slotted Impact Socket Set, 12-Point, 6-Piece

(Cat. No. 66090)

- Includes 12 commonly used sizes in 6 easy-to-carry sockets
 - 1-1/8 x 15/16"
 - 1 x 13/16"
 - 7/8 x 11/16"
 - 3/4 x 9/16"
 - 5/8 x 7/16"
 - 1/2 x 3/8"
- 2 impact sockets feature an alignment slot to tighten and loosen most pole hardware: 1-1/8" x 15/16" and 3/4" x 9/16"
- Sockets are color coded to quickly identify slotted and sizes
- Single-ended impact socket wrenches with hands free adjustment between socket sizes
- Sockets have a high-torque, 12-Point design making it easier to position on fasteners
- Deep socket with a 1/2" drive works great for pole hardware installation and removal
- Cross hole design helps maintain socket connection to adapter or impact wrench

"Trade professionals have numerous tasks to complete every day on a given jobsite, and therefore need tools that save them time and effort," says Alan Weir, product manager at Klein Tools. "Each coaxial spring-loaded socket in this set includes two sizes in each tool and is color coded, making it easy to quickly identify and switch sizes while working."



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



Milwaukee® Introduces First M18™ Rotary Lasers and Accessories

Milwaukee Tool continues to drive innovation within the layout category with the launch of three new M18™ Rotary Lasers and two new accessories. These M18™ Rotary Lasers are impact protected with the ability to withstand 1-½ meter drops and 2-meter tripod tips and provide a simplified setup for users.

"Milwaukee Tool is building on our commitment to the laser category by expanding into the rotary laser space and delivering best-in-class solutions for our users," said Kenan McCutcheon, Product Manager for Milwaukee Tool. "The M18™ Red Exterior Rotary Laser, M18™ Red Dual Slope Rotary Laser, and M18™ Green Interior Rotary Laser are designed to provide improved productivity and efficiency while being fully compatible with over 250+ solutions."

M18™ Red Exterior Rotary Laser
M18™ Red Dual Slope Rotary Laser
M18™ Green Interior Rotary Laser
M18™ Rotary Laser Accessories (Tripod and Wall Mount)

Milwaukee expands the rotary laser category lineup with the new rotary laser tripod and wall mount. With a durable aluminum design, the Milwaukee rotary laser tripod withstands more impacts and tips on the jobsite. The smoother height adjustment allows the legs to be quickly adjusted and delivers an easier setup in any environment. The rotary wall mount provides the fastest mounting with a single dial setup and mounting capability on flat, vertical, or horizontal materials.

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

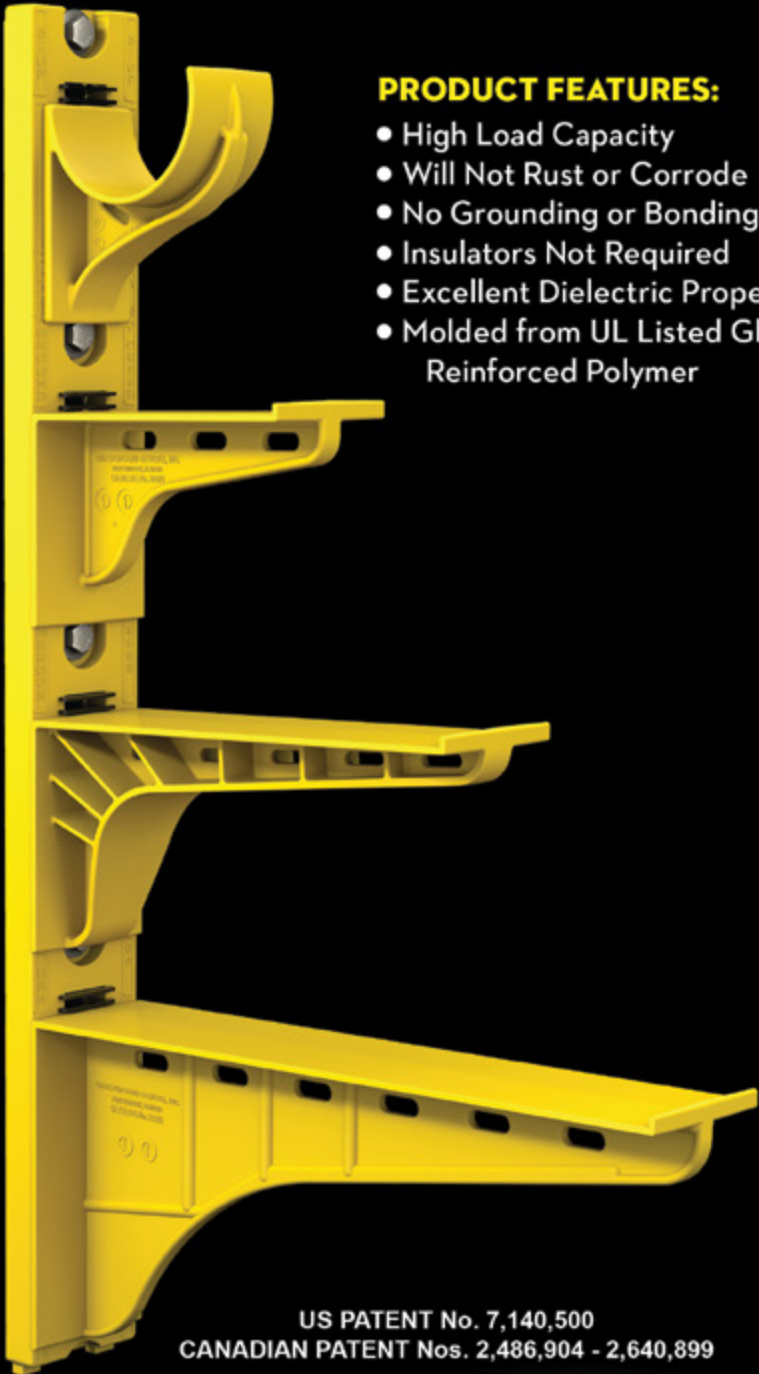
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US PATENT No. 7,140,500
CANADIAN PATENT Nos. 2,486,904 - 2,640,899



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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Mitsubishi Electric Automation, Inc. Launches New FR-E800 Series Inverter for Facilities with Only a 120 Volt Source Available

The FR-E810W inverter complements the existing FR-E800 series inverter family by operating from a 120V source – a common volt-age source available throughout North America.

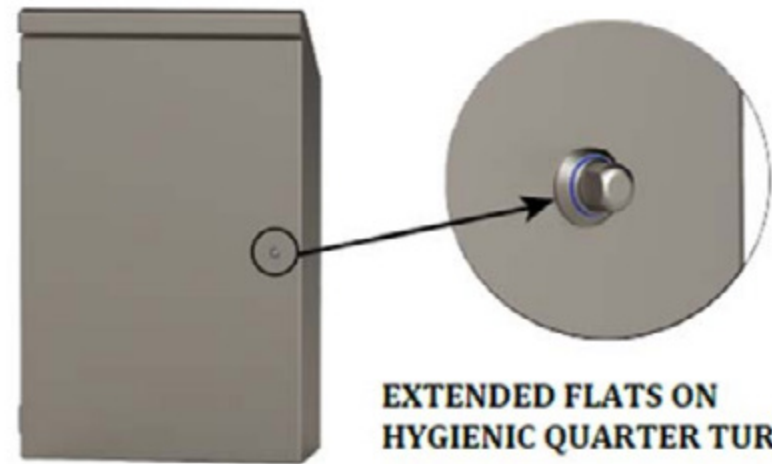
Mitsubishi Electric Automation, Inc. announces the launch of FR-E810W, an expansion of the FR-E800 series inverter lineup providing 120V ser-vice solutions. FR-E810W offers the improved safety, energy savings, and operation reliability of FR-E800 inverters to an additional voltage class. Traditionally, customers using Mitsubishi Electric Automation's 240V inverters, with 120V service, were required to purchase an external step-up transformer to increase the supply voltage from 120V to 240V. The FR-E810W provides 120V service solutions, saving on unnec-essary added costs.

FR-E810W inverters offer the same capabilities and benefits as the other inverters in the FR-E800 series, including supporting CC-Link IE TSN technology, two Ethernet ports, enhanced predictive maintenance, and AI fault diagnostics. A significant benefit of the FR-E810W is that it re-lieves customers of the added cost of purchasing additional materials when only 120V service is available.

“With some of our customers only having 120V available at their fa-cilities, it was important that we offer an inverter that would provide them the quality and performance of our other FR-E800 inverters, but with a capability of operating in a lower voltage environment,” said Tom Henfling, product manager at Mitsubishi Electric Automation, Inc.



For more information, visit
<https://us.mitsubishielectric.com>



Custom Stainless Enclosures Highlights 4Xxtreme® Single Hygienic Quarter Turn Design for All Enclosure Door Sizes

Award-winning design leads the industry in overall cost of ownership

Milwaukee Tool continues to drive innovation within the layout caCustom Stainless Enclosures, Inc. highlights its Single Hygienic Quarter Turn Design for all enclosure door sizes, ideal for the dairy industry. This simple but very effective design reduces premature electrical failures, extends the life of electronics and electrical components, resulting in increased plant production, reduced overall cost of ownership, and increased plant revenue.

The primary reason water gets into electrical enclosures today is that users do not close all the Quarter Turns (closing points) on the enclosure, which is paramount in keeping electrical equipment dry. Custom Stainless Enclosures has made a simple change to its already robust design to ensure its enclosures are closed properly by having one closing point per enclosure door. Custom Stainless Enclosures provides a Single Hygienic Quarter Turn door for every enclosure they manufacture.

Custom Stainless Enclosures' largest IP69K Door is 80" high x 36" wide and requires only one Hygienic Quarter turn or closing point. Competitors with much smaller doors (48" high x 36" wide) require up to seven quarter turns to maintain the same washdown IP69K rating. Custom Stainless Enclosures' Single Turn innovation won the Innovation Award at the 2021 Process Expo.

For more information, visit
<https://4xxxtreme.com>



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IP5

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IP19/20

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IP21a

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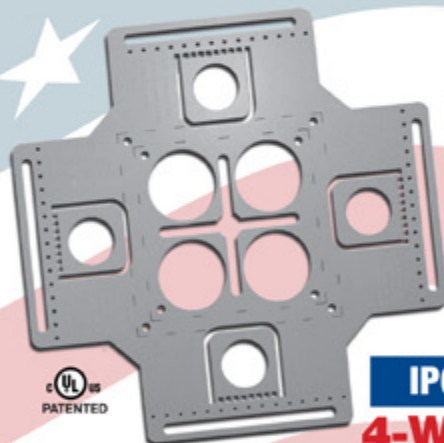
Use 4-Conduit Block (IP19 or IP20) with QwikBlock (IP21a)

IP6d

2-Way
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Our Family of Conduit & Box Support Plates Saves Valuable Time & Money!



IP6

4-Way

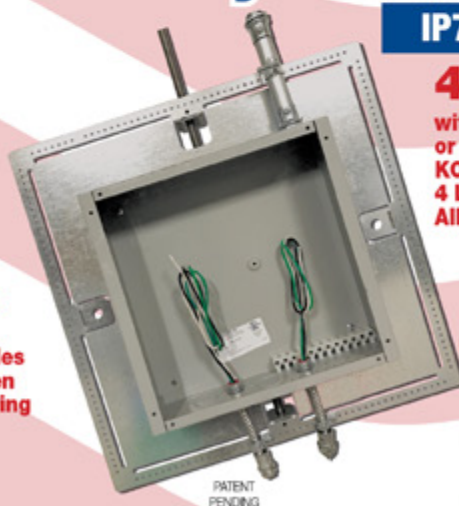
Enter Any KO on All 4 Sides of the Box Plus 4 Large Open KOs in Center Allows Entering Back of Box



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

Mount Horizontally or Vertically from One Single Support

20 x 20

Supports up to 12 x 12 J-Box

28 x 28

Supports up to 20 x 20 J-Box

MADE IN THE USA!

Plus More Being Invented for **SAFER BETTER FASTER** Jobs . . . Call With Your Ideas!

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