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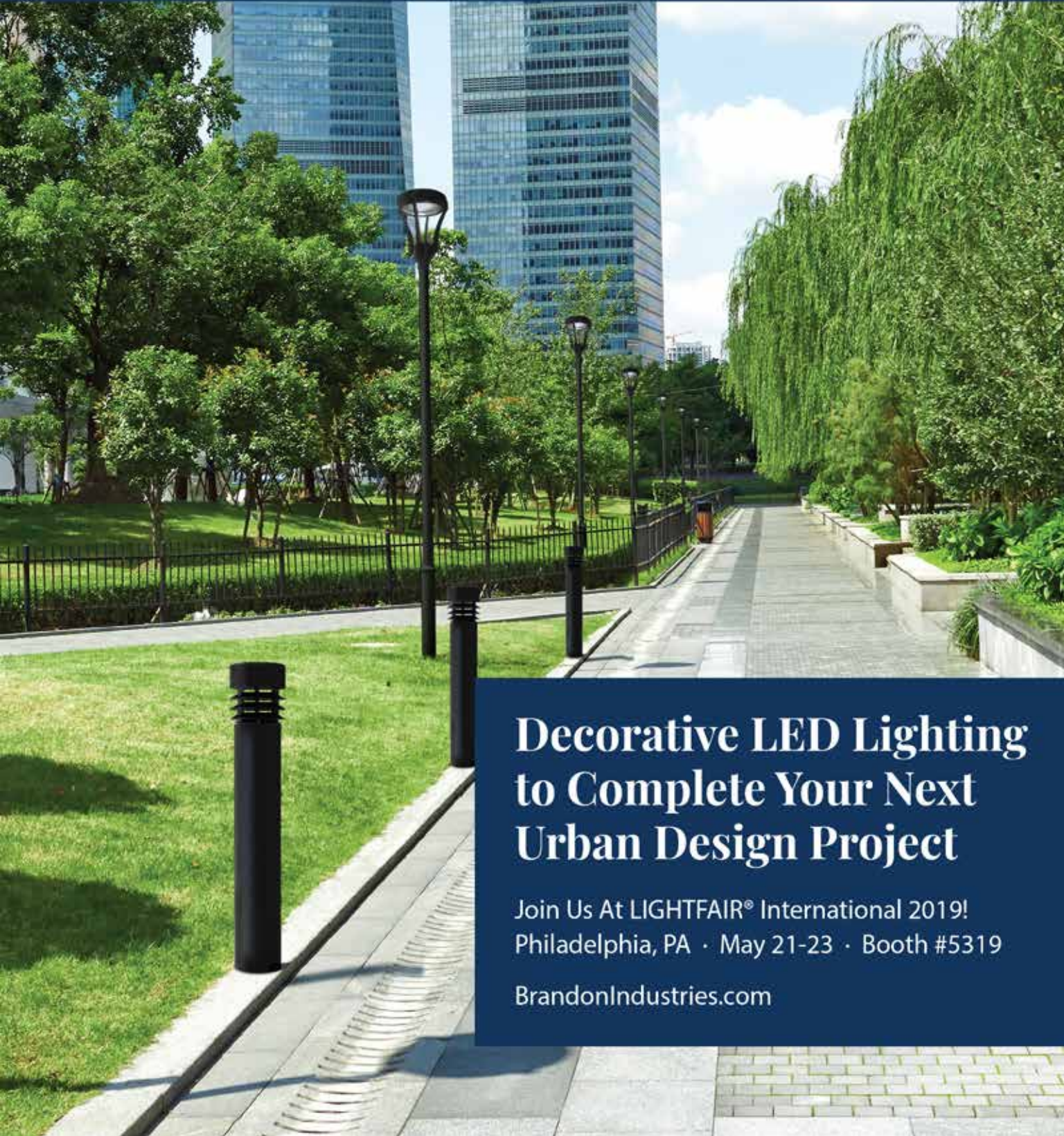
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THE MOST UNIQUE AND RELIABLE RESOURCE FOR TODAY'S ELECTRICAL CONTRACTOR

THE ELECTRIC CURRENT

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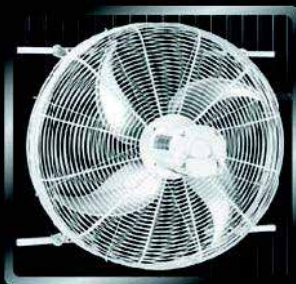
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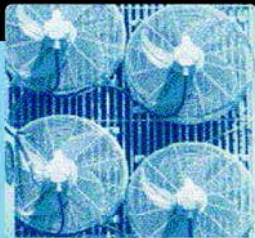
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COMPARING INDUSTRIAL TRANSFORMERS



Industrial transformers come in various sizes, capacities and functionalities (just to name a few). For operators, one must select a transformer that meets the needs and requirements of the project or business.

This article compares the following types of transformers and their applications: isolation transformer, auto transformer, DOE 2010/2016 transformer and buck-boost transformer.

Isolation Transformer

An isolation transformer is a basic, two-winding unit with separate primary and secondary coil windings. As the term suggests, a main isolation component separates the two windings. In application, an operator connects line-in power on the primary side of the transformer, with the unit providing isolated output of the alternating current on the secondary side. This type of transformer is mainly used for electrical isolation. Because of this, electrostatic shields and other protective components are commonly used with the unit, in order to deter noise.

“Isolation” occurs in isolation transformers, because an electrical connection is not shared/does not exist between inputs and outputs.

When used strictly for isolation, an isolation transformer may feature a 1:1 (equal) turns ratio, suggesting no voltage conversion will take place. The turns ratio in the primary and secondary windings are not equal when a transformer is required to step up or step down input voltage (more on this later).

When to use: prevent ground loops, accurate measurement requirements, equipment preservation (isolation), electrical safety, sensitive equipment, mitigate electrical disruptions, transfer power between two non-connected circuits and more.



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Auto Transformer

Next, an auto transformer is a unit with a common primary and secondary winding. Due to the transformer's shared, single-winding configuration, isolation does not occur between inputs and outputs. Furthermore, the common coil in transformer is responsible for the functionality of both primary and secondary windings. For voltage conversion, the winding component in an autotransformer can be tapped accordingly, at various points on the winding.

As mentioned earlier, when stepping up or stepping down input voltages, conversion is dictated by the turns ratio (also known as transformer ratio). To arrive at the turns ratio of an autotransformer, one must divide the turns on the primary side with the secondary side. For example, if 240V is provided on the primary and 120V is required on the secondary, the required number of loops on the primary side is 2x (double), compared to the secondary side, resulting in a 1:2 ratio.

From a cost perspective, auto transformers are economical; in a sense that the unit's shared configuration allows it to use less materials. Additionally, this type of transformer is more compact than an isolation transformer. Businesses with strict space-saving requirements at the work site may find this feature advantageous.

When to use: voltage conversion, current regulation, non-isolating electrical connections and more.

Drive Isolation Transformer

Drive isolation transformers are used with AC/DC variable motor drives. Isolation is provided for the input current and SCR load, as the primary windings and the secondary windings are separate. In application, an operator may utilize a drive isolation transformer to reduce load issues inflicted by the SCR drive component.

When to use: SCR drives, variable speed drives, motors, reduce mechanical stress, decrease noise/electrical distortions, voltage conversion and more.

DOE 2010/2016 Transformers

The US Department of Energy (DOE) governs efficiency and performance standards of industrial transformers under the Energy Policy and Conservation Act of 1975 (EPCA) and 10 CFR Part 431 Energy Conservation Program: Energy Conservation Standards for Distribution Transformers; Final Rule.

DOE 2016 standards officially superseded DOE 2010 standards on January 1, 2016. Hence, most of the focus will be on DOE 2016 transformers.

There are several meticulous details in the standards that must be carefully taken into consideration. For instance, the scope of the term "distribution transformer" does not refer to an autotransformer, rectifying transformer, units with 20%+ tapping range, welding transformer, drive isolation transformer and more.

Instead, the scope of DOE 2016 transformers includes the following: liquid-filled/immersed, low voltage dry-type and medium voltage dry-type.

Based on current DOE 2016 regulatory guidelines, this type of transformer features an input voltage of 34.5kV (or less), output voltage of 600V (or less) and a frequency rating of 60 Hz. Moreover, the scope of application is limited to distribution transformers with capacities not exceeding 2,500 KVA for both liquid and dry-type units.

When to use: DOE compliance, industrial regulation compliance, energy savings and more.

Buck-boost Transformers

Lastly, a buck-boost transformer is a type of autotransformer (according to 2008 NEC Handbook Section 210.9) that steps up (boost) or steps down (buck) an input voltage in an economical manner. Equipped with two primary windings and two secondary windings, this type of transformer is applicable to small voltage conversion requirements, roughly between 7 and 20 percent.

Buck-boost transformers are versatile, depending on their connections. When functioning as an autotransformer, it is common practice to use 2-3 buck-boost transformers for handling three-phase voltage rectification, while one unit can be used for single-phase voltage conversion. In an isolated configuration, operators can use the unit as an isolation transformer, which converts line-in power to a desired low voltage setting (12, 16, 24, 32 or 48V).

When to use: field connections, space-saving configurations, minimal voltage conversion, motors, lights and more.

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BURNDY® Announces the Release of the PATRIOT® PATCUT954HS Series Long Reach, Live Line, Cable Cutter

BURNDY®, a leading manufacturer and provider of compression connector solutions to the industrial, energy, construction, telecommunications, petrochemical, data center, and transportation industries, is pleased to announce the release of the PATRIOT® PATCUT954HS Long Reach, Insulated, Hydraulic Cable Cutting tools.

A new addition to the PATRIOT line of long reach cable cutting tools, the PATCUT954HS Hot Stick Cable Cutter (available in 82" and 94" lengths) provides users both increased flashover protection and extended reach for live line cutting. The large capacity C-Head is designed to hook onto conductors, stabilizing the tool for easy cutting, up to 954 kcmil ACSR.

Designed for safety, convenience, and function, the PATCUT954HS series of battery-operated tools perform cuts in less than 15 seconds, minimizing exertion and time required when using similar manual or ratchet type models. Bring the control to your fingertips while safely working with hard to reach, energized overhead or underground lines.

The pistol grip and adjustable assist handle allow for extra control when operating overhead, while the rapid advance ram reduces time on live lines, adding to the overall ergonomics and safety of the system. Large on/off triggers and hand grip area enhance the user experience also.

The PATCUT954HS features protected electronic circuitry, the robust and reliable INFINITY DRIVE® transmission, and a patented high-speed hydraulic pump system, retaining the industry-leading performance, speed, and dependability expected from the PATRIOT line of rugged and reliable tools.

Powered by Makita 18-volt lithium-ion batteries for long-lasting power, the PATCUT954HS is multi-Ah capable, accepting 2.0Ah through 6.0Ah sizes. It is offered with a choice of either 3.0Ah or 5.0Ah batteries. A lifetime warranty on the INFINITY DRIVE is included, along with a 5-year limited warranty for the tool (excluding blades and the pole itself), and a 3-year limited warranty on the batteries and charger.

For more information about the PATCUT954HS Series cutter or any of our products, contact our US-based Customer Service Department in Londonderry, New Hampshire at 1-800-346-4175.

About BURNDY®

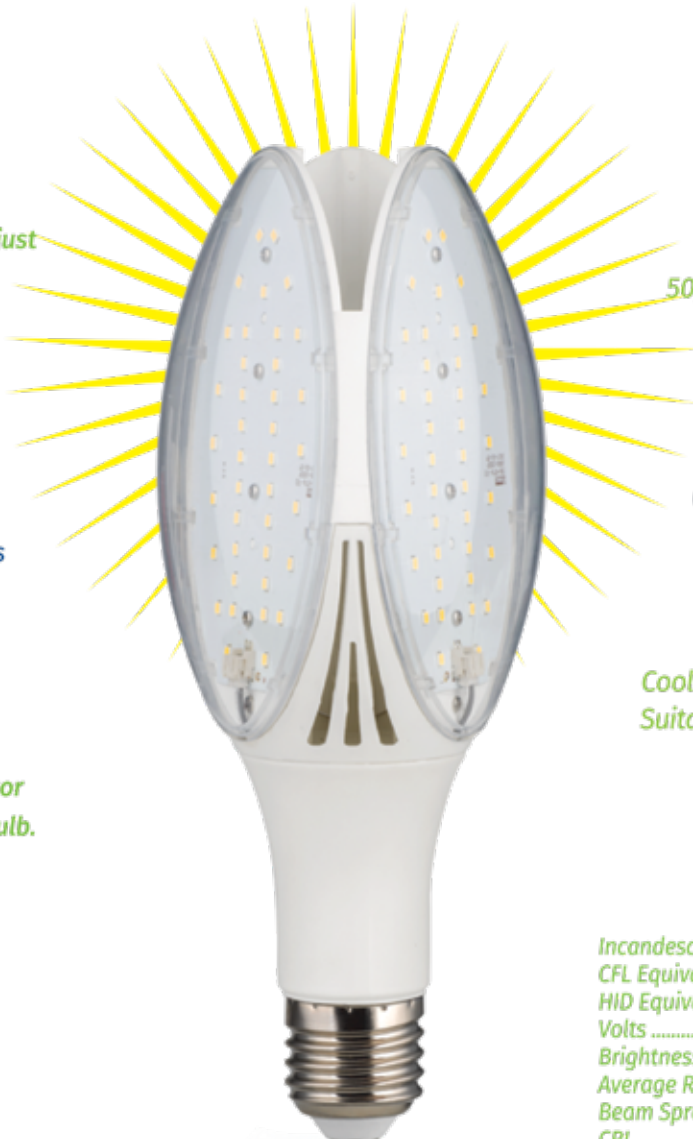
Headquartered in Manchester, New Hampshire, BURNDY® has over 90 years of dedicated customer support in both service and product. Our customers need to look no further than BURNDY® for all their connector, tool, and accessory needs. BURNDY® is the only manufacturer to have the BURNDY® Engineered System of coordinating dies, connectors and tools. The three elements have been specifically designed to work together and engineered to meet stringent, accepted quality standards allowing the user complete confidence in the integrity of the connection.

For additional information, contact us at 47 East Industrial Park Drive, Manchester, New Hampshire 03109; call Customer Service at 1-800- 346-4175; or visit our website at www.BURNDY.com.

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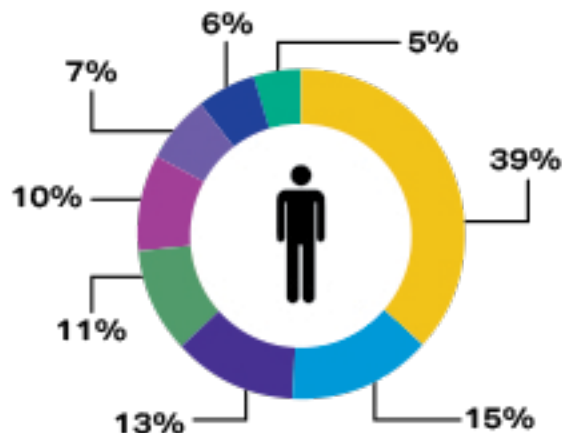
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Klein Tools® Extends Electrical Tester Product Line, Introduces Two New Innovations



Klein Tools, for professionals since 1857, introduces a new Digital Circuit Breaker Finder (Cat. No. ET310) and an AFCI/GFCI Outlet Tester (Cat. No. RT310), augmenting Klein Tools' existing Electrical Test and Measure product offering. The ET310 Circuit Breaker Finder easily identifies the circuit breakers to which specific electrical fixtures such as outlets or light fittings are connected. The RT310 is a capable outlet tester that identifies common wiring faults in standard, AFCI and GFCI outlets in addition to being able to test AFCI and GFCI devices by simulating the fault conditions. Both tools are designed for use with North American-style grounded electrical outlets.

Digital Circuit Breaker Finder (Cat. No. ET310)

- Quickly and accurately locates the correct circuit breaker in a panel corresponding to the circuit to which an electrical outlet or fixture is connected
- Tester consists of two parts:
 - o Transmitter connects directly to the electrical outlet or fixture
 - o Receiver scans the panel and locate the corresponding breaker
- Receiver delivers visual and audible indicators when the correct breaker has been located
- Transmitter features a three-pin plug for use with North American-style grounded electrical outlets in 90-120V AC circuits
- Transmitter incorporates a convenient GFCI outlet tester to inspect the wiring condition at the electrical outlet and test GFCI devices
- Transmitter docks securely in the receiver for convenient storage as a single item when not in use
- Receiver powers off automatically after three minutes of non-use to conserve battery life
- Transmitter is powered by the circuit when connected to the electrical outlet or fixture
- Low battery indicator and easily accessible battery compartment; receiver uses one 9V battery
- Rugged design stands up to harsh jobsite conditions with 6.6-foot (2 m) drop protection
- CAT II 120V safety rating
- Measurement Category II is applicable to test and measuring circuits connected directly to utilization points (socket outlets and similar points) of the low-voltage MAINS installation
- Includes transmitter, receiver, user manual, and 9V battery (for receiver)
- Additional accessories to connect to other electrical fixtures are sold separately (Cat. No. 69411)



"Finding breakers in a busy panel can be a time-consuming task but is made simple by the use of a capable circuit breaker finder," says Sean O'Flaherty, director of product management at Klein Tools. "The ability to quickly and accurately find the correct breaker to which a specific outlet of fixture is connected the first time, every time, delivers great efficiency to the electrician. It also prevents the unnecessary powering-down of circuits not involved in the task at hand which delivers convenience to the property owner."

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AFCI/GFCI Outlet Tester (Cat. No. RT310) • Detects the most common wiring faults in standard, AFCI, and GFCI electrical outlets
• Tests AFCI devices by simulating arc fault conditions
• Tests GFCI devices by simulating ground fault conditions
• Capable of detecting a dual-open wiring fault with simultaneous open neutral and open ground wires (patent-pending technology)
• Tester delivers clear visual indication of the wiring condition at the electrical outlet
• Three-pin plug for use on North American-style grounded electrical outlets in 120V AC circuits
• 10-inch (254 mm) flexible electrical cord for easy access to electrical outlets in hard to reach spaces
• Auto power-off after two minutes of non-use conserves battery life
• Low battery indicator and easily accessible battery compartment; includes 3 x 1.5V AAA batteries
• Built to withstand a 6.6-foot (2 m) drop
• CATIII 135V safety rating
• Measurement category III is applicable to test and measuring circuits connected to the distribution part of the building's low-voltage MAINS installation
• AFCI test method is a patent-pending design unique to Klein Tools

"The detection of wiring faults in electrical outlets is an application of paramount importance to electricians," says O'Flaherty. "This is often impossible, however, due to dual open ground and open neutral faults. Klein Tools' new AFCI/GFCI Outlet Tester addresses this circumstance and can identify the dual open fault condition as well as detect the presence of the energized live wire (patent-pending). In addition to testing standard GFCI devices and 30mA ground-fault devices by simulating ground faults, the RT310 can also test AFCI devices by simulating arc-fault conditions. The RT310 is a one-stop outlet testing solution ideally suitable for electricians, facilities and maintenance professionals and technicians engaged in residential commercial and industrial electrical work.

"We are proud to introduce both the ET310 and RT310 to Klein Tools' test and measurement portfolio."

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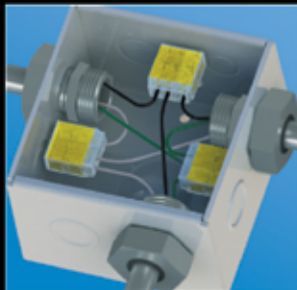
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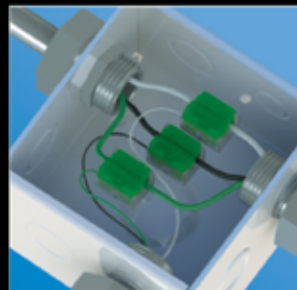
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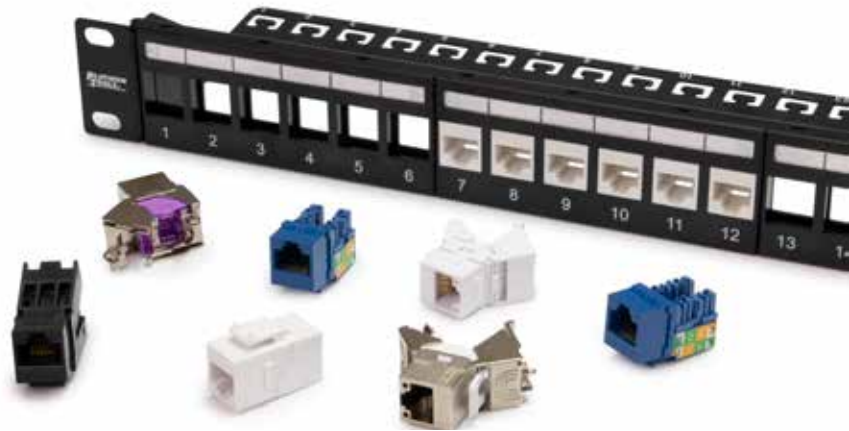
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Platinum Tools®, the leader in solutions for the preparation, installation, hand termination and testing of wire and cable, is proud to announce it will showcase the new shielded and unshielded Unloaded Patch Panel line during CEDIA Expo 2019, held in Denver from Sept. 12-14 at the Colorado Convention Center, booth # 4133. The new 24- and 48-port line is now available.

“Platinum Tools is known as a leader in providing products and solutions for the structured wiring networking world of data, voice, and video,” said Lee Sachs, Platinum Tools, LLC president and general manager. “Our Unloaded Patch Panels make media integration easy, flexible, and field-configurable by populating the ports as needed.”

The Unloaded Patch Panels make it easy to mix and match keystones, replace a damaged port, and add new runs. They also make category upgrades easy, maximize limited rack space, and are perfect for residential or small office applications.

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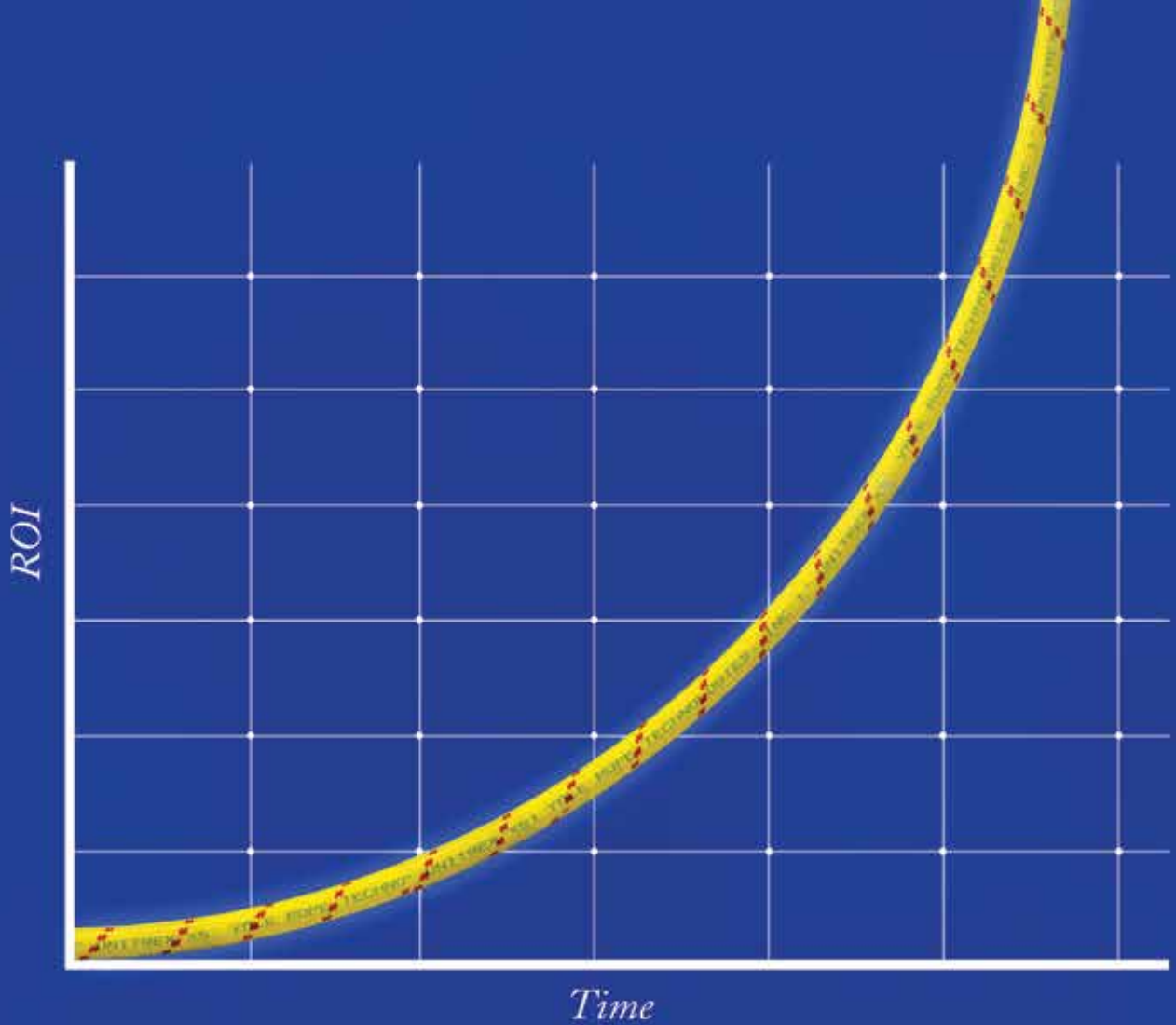
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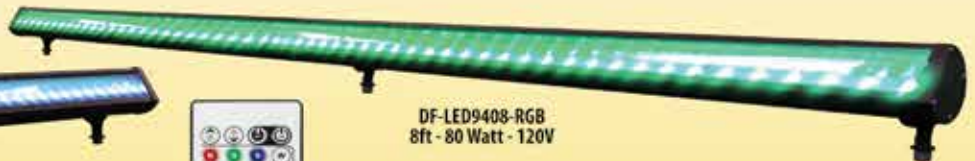
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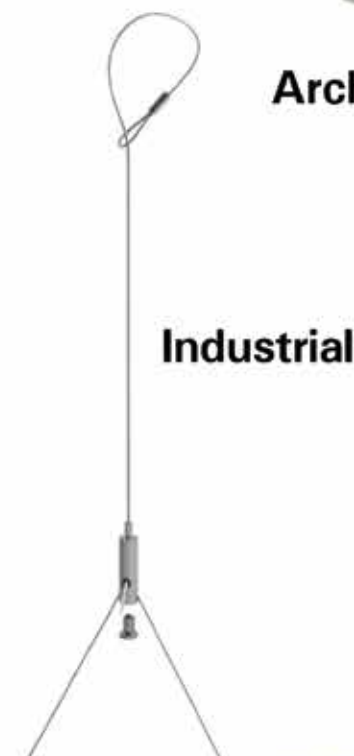
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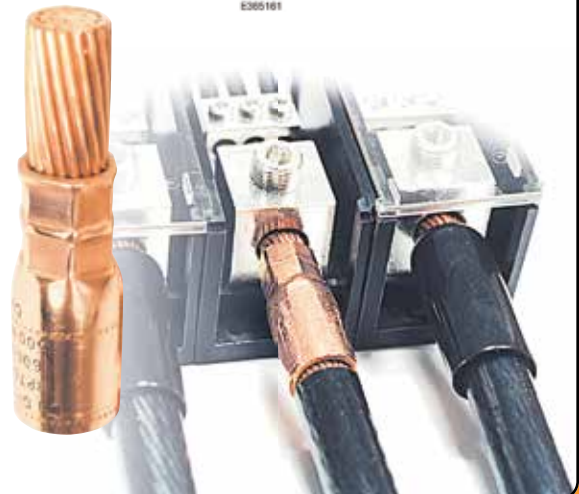
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