

SOLUTIONS FOR

Solar Energy



LEADING THE WAY

The Power of Partnership

As the solar industry has grown, so has Hubbell's involvement. Today, we supply products and services that span the entire scope (panels, arrays, collector system, substation and transmission) of the solar industry. As a result of our global reach, we can offer product solutions and value-added services that are unparalleled in the industry. We have been, and continue to be, focused on providing solutions to the most challenging renewable application requirements.



Product	Hubbell	Competitor 1	Competitor 2	Competitor 3	Competitor 4
Compression Lugs	●	●		●	
Wire Management Clips	●		●		
Cable Ties	●	●	●		
Compression Grounding	●	●			
Mechanical Grounding	●	●			
Exothermic Grounding	●				
Battery Tools (Compression/Cutting)	●	●			
Sectionalizing cabinets	●				●
Junction Boxes	●				●
Elbows/Splices/Arrestors	●			●	
Hardware	●	●			

Strength, performance, quality, and outstanding customer service characterize all **Hubbell** products & Services. Renewable energy applications such as solar power have unique challenges and requirements, so Hubbell and its broad group of industry leading brands are proud to offer a wide selection of Balance of System products to serve the Solar Market. In addition to our core products and options, Hubbell also has tremendous capabilities to customize a solution for your project and application.



Hubbell Power Systems, Inc. (HPS) manufactures a wide variety of products that are used to support the Global Utility Generation, Transmission, and Distribution Infrastructure. This includes a heavy assortment of product solutions used in the construction of utility scale solar generation projects. These Products include cable accessories, arrestors, Fiberglass sectionalizing cabinets, polymer precast enclosures and equipment pads.



BURNDY has a reputation for being a leader in innovation in engineering and manufacturing high quality compression connectors, grounding products, and installation tooling. Today, BURNDY® brings this rich tradition of product innovation to the renewable energy industry.



The Quazite® brand was established in 1982 and acquired by Hubbell Power Systems, Inc. in 2006. Today, we manufacture a variety of polymer concrete enclosures for the electric utility, communications, C&I, and water markets to provide safe, durable and cost-effective housing for utility systems equipment. Quazite products are tested to meet ANSI/SCTE specifications for underground enclosure integrity and are manufactured in Lenoir City, Tennessee.



Wiley has been there as the solar industry's technology has evolved, allowing solar energy to become more accessible and affordable. We are leading this evolution with the cost- and time-saving Wiley family of products which are specified more often than any other brand in projects by industry-leading companies.

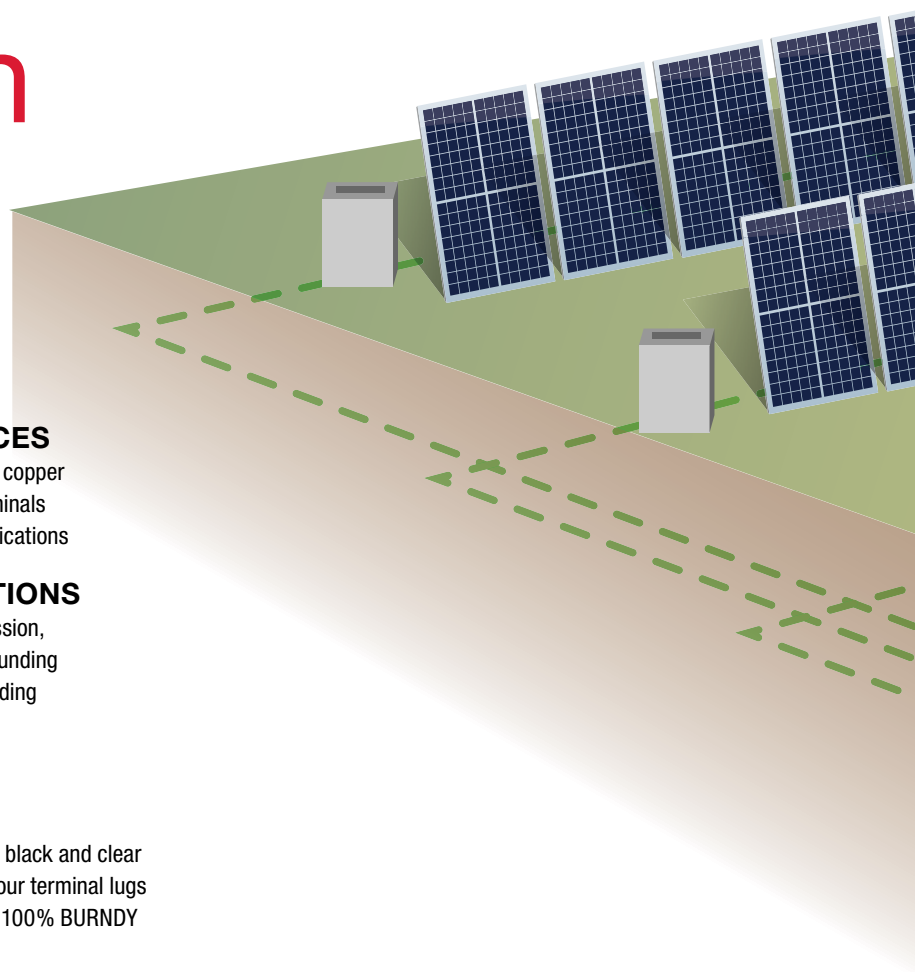


Polymer concrete is made from selectively graded aggregates in combination with a polymer resin system. When combined through a process of mixing, molding and curing, an extremely powerful crosslinked bond is formed. Precast polymer concrete is reinforced with fiberglass for exceptional strength and rigidity.



LEADING THE WAY

Utility Solar Collection System



1 MEDIUM & LARGE COMPRESSION TERMINALS & SPLICES

BURNDY® HYDENT™ uninsulated copper and aluminum compression terminals and splices for all sizes and applications



2 GROUNDING SOLUTIONS

BURNDY manufactures Compression, Mechanical, and Exothermic grounding connectors for virtually all grounding applications



3 COLD SHRINK

BURNDY offers a full line of both black and clear cold shrink products to insulate our terminal lugs and splice products to provide a 100% BURNDY Engineered Connection



4 WILEY BONDING & GROUNDING

The Wiley WEEB® (Washer, Electrical Equipment Bond)—a simple, consistent and low-cost method to bond PV module frames and racking together



5 BURNDY® UNIRAP™ CABLE TIES

Choose from a wide array of colors, tensile strengths ranging from 18 to 900 pounds and latching mechanisms ready to be secured



6 WILEY WIRE MANAGEMENT

Engineered for high-quality wire management solutions, Wiley Cable Clips simplify wire management and create a cleaner aesthetic to solar PV arrays



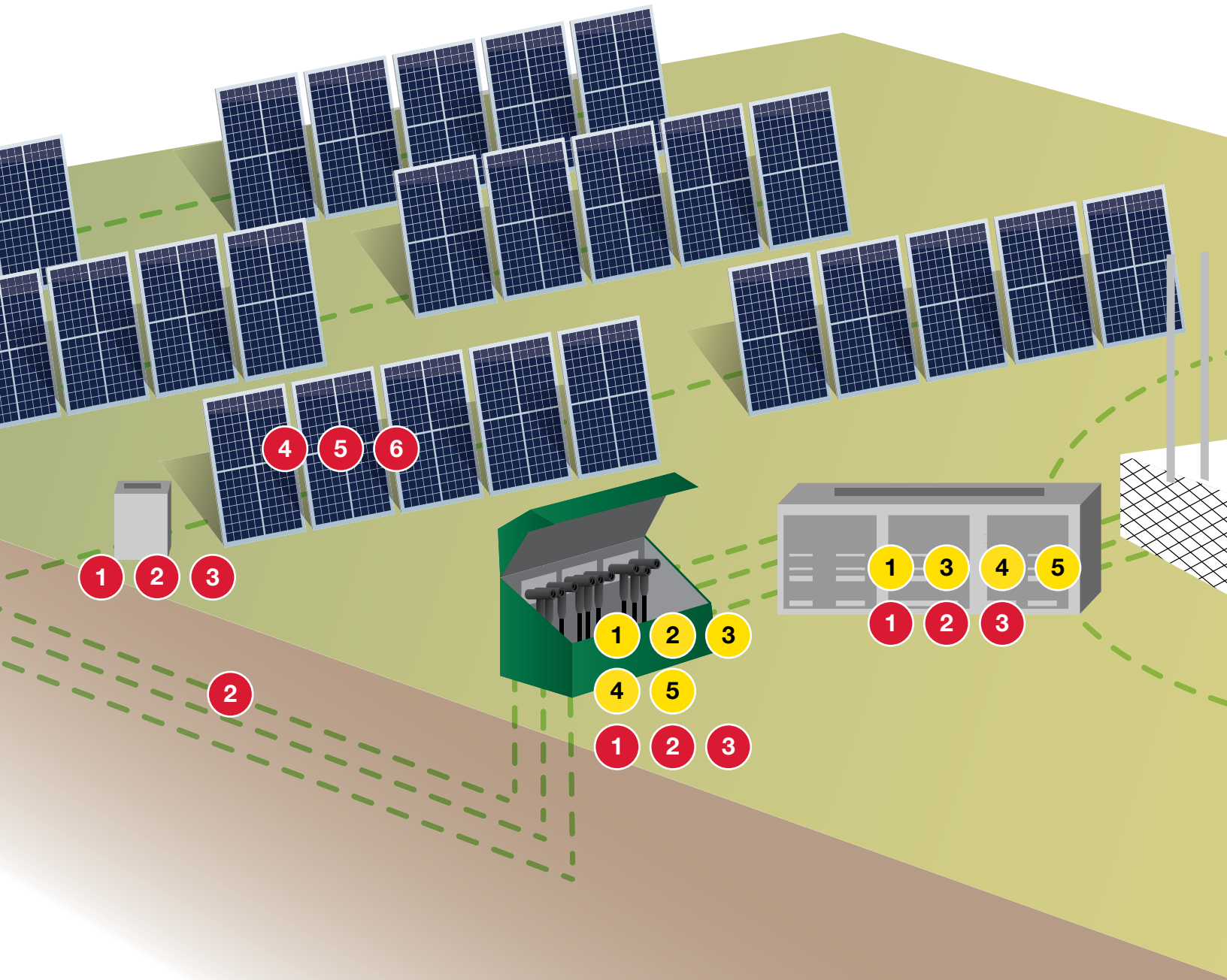
1 ELBOW ARRESTERS

Limits over voltages to acceptable levels, protecting equipment and extending service life



2 PRIMARY PEDESTALS (SECTIONALIZING CABINETS)

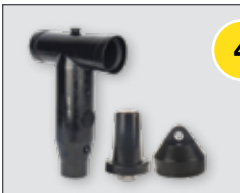
Full line of fiberglass and steel sectionalizing enclosures



3

BOX PADS & GROUND SLEEVES

Hubbell box pads and ground sleeves provide a means to securely anchor and support the weight of pad-mounted electrical equipment



4

T-BODIES/ELBOWS

Full line of 35kV 600 Amp cable accessories, Mates to IEEE Std. 386 Interface 13, is 200kV BIL rated and can be installed on conductors ranging from #2AWG to 1250 kcmil



5

ACCESSORIES

- Reducing tap plugs
- Bushing extenders
- Insulating caps
- Shear bolt connectors
- Cold shrink seal kits

LEADING THE WAY

Commercial Rooftop Applications



1 WEEB® (WASHER ELECTRICAL EQUIPMENT BOND)

WEEB® washers eliminate the need for older, more expensive grounding methods while also significantly reducing the amount of labor and materials used in installations



2 WEEB® GROUNDING LUG

The low profile of the WEEB® Grounding Lug allows it to be installed in a variety of positions with one solid or stranded copper wire or two copper wires



3 GROUNDING JUMPER

The Wiley Bonding Jumper is used to create an electrical connection between two pieces of anodized aluminum, galvanized steel, or any electrically conductive metal. This maintains electrical continuity over long spans or air gaps between metal structures



4 CABLE CLIPS

Featuring dual wire compartments, the clips can be used in a wide variety of mounting configurations (including 90 degree) for module and rail applications



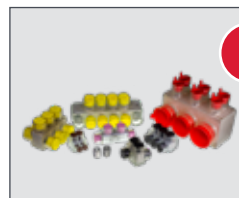
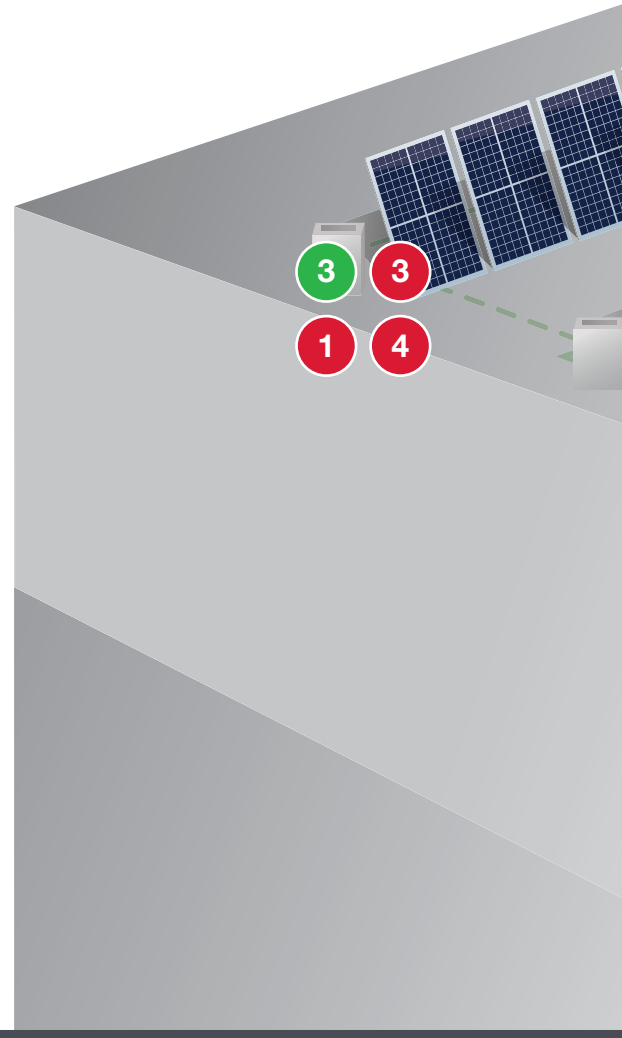
5 BMCSS

Our universal mid-clamp and adjustable end clamp designs accommodate various module thicknesses



6 BUNDLE STRAPS

Coated bundle straps combine the longevity of stainless-steel cable ties with additional flexibility in mounting locations. The coated steel strap can be routed through mounting and grounding holes



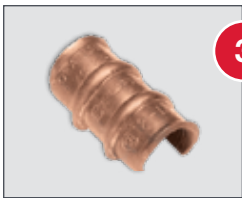
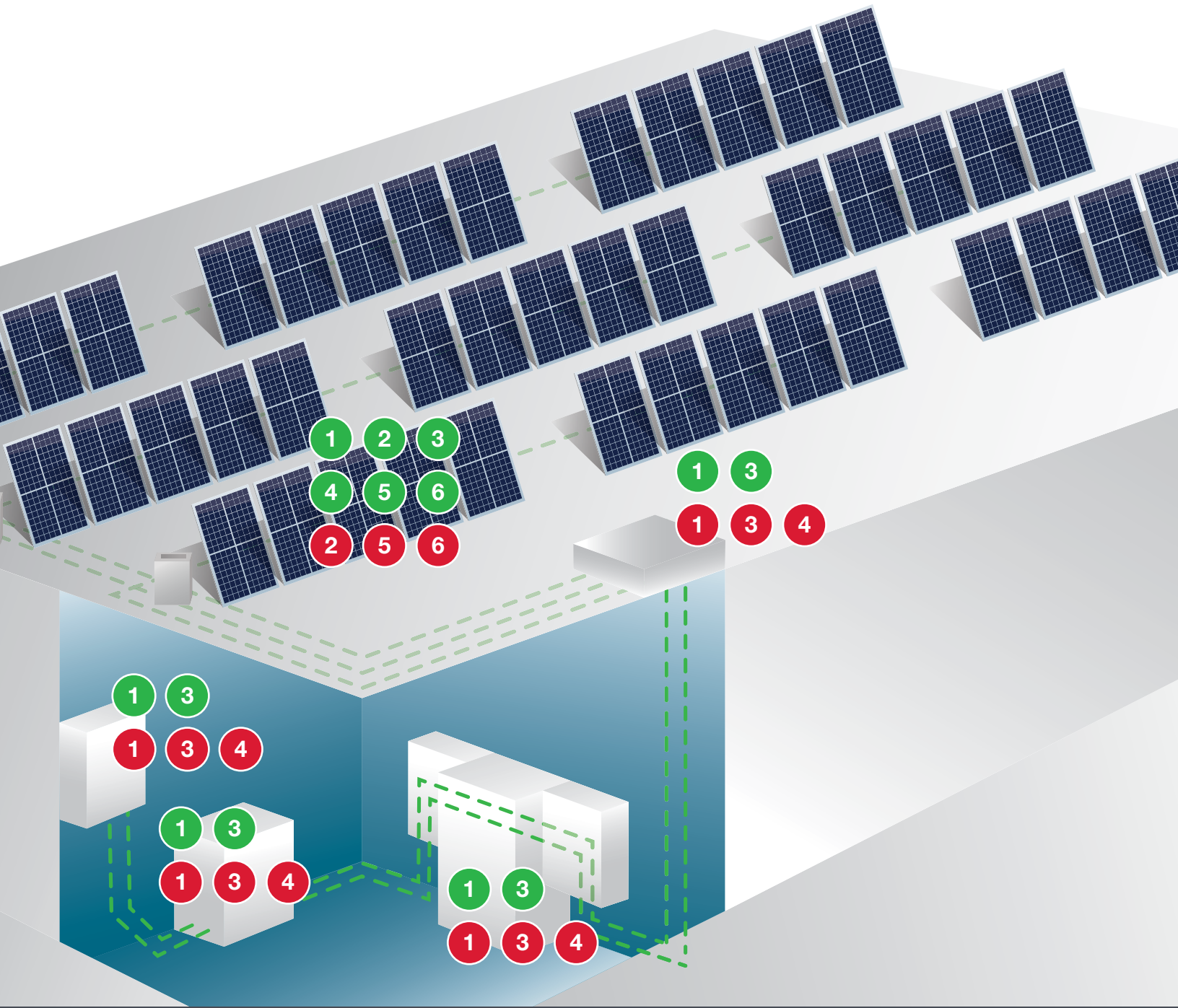
1 UNITAP™

UNITAP® Clear Insulated Multi-Tap is UL Listed to UL486A-486B and CSA Certified for use with flexible conductors with no ferrules required



2 UNIRAP™

Choose from a wide array of colors, tensile strengths ranging from 18 to 900 pounds and latching mechanisms ready to be secured



3 THIN WALL C-TAPS
Type YC-L is a thin wall, high conductivity copper connector for making copper taps and parallel connections for #14 for 3/0 AWG



5 BTCGC-SS
The Lay-In QIKLUG™, Type BTCGC-SS is ideally suited for grounding and bonding applications accommodating both copper and aluminum conductor sizes #14 AWG to 250 kcmil



4 Y122CMR
Rotating die, full cycle ratchet tool



6 CL501TN
Copper Lay-In QIKLUG™ lugs allow for continuous runs of conductor and are well suited for terminations



BUILDING THE BOND

Engineering Innovation At the Speed of Light

Whether you're installing miles of wire or acres of solar modules, it's the components no bigger than a few inches that can give the project long-term success and peace of mind. As PV technology has evolved, BURNDY continues to focus on providing solutions to the most challenging application requirements.

JOIN THE GOLDEN ROW PROGRAM

The Golden Row program is specially designed for utility scale solar jobs. After the installer completes one full row — the golden row — of the installation early on in the project, a BURNDY/Wiley representative will travel to the job site with wire management solutions to assist in product selection and installation on the golden row. Our goal is to ensure that a customer is able to trial and confirm product selection of cable clips, bundle straps or other wire management solutions for their project.

WILEY WEEB® (WASHER, ELECTRICAL EQUIPMENT BOND):

- Significantly reduces the amount of labor and materials needed for installations (when compared with other grounding methods);
- Requires less copper conductor;
- Is engineered for outdoor use;
- Can be installed in all environments;
- ETL Listed to ANSI/UL 467;
- Is Certified to CSA Standard C22.2 No. 41; and
- Is UL Recognized to UL 2703.

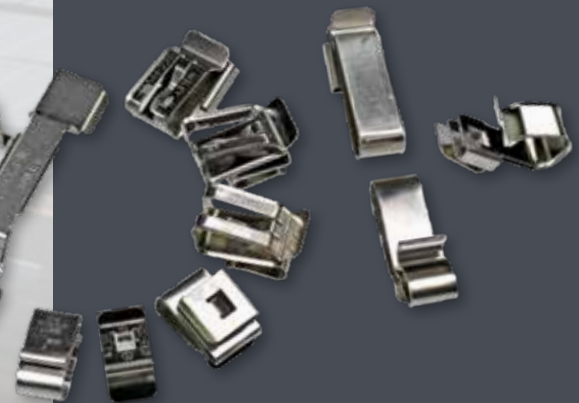
WILEY WIRE MANAGEMENT

Engineered for high-quality wire management solutions, Wiley Cable Clips simplify wire management and create a cleaner aesthetic to solar PV arrays. Wiley wire management products give installers the peace of mind in knowing that, when used properly, all applicable standards and guidelines will be met. Products are tested to applicable UL standards and are all listed for use in solar applications. When it comes to meeting requirements for support intervals, Wiley has a wide array of products that make meeting these requirements possible.



Here's a look at what our engineers have developed to make it even easier and more affordable to incorporate solar technology:

- Expanded line of wire management solutions
- New mid-clamps
- New WEEB®-DSK line designed for bottom-mount and top-clamp applications
- Line of custom solutions for utility-scale customers





ON SOLID GROUND

Grounding Solutions

We introduced the first mechanical connector, the first network underground system and the first compression grounding system, just to name a few. No matter the option you choose, you'll know you're getting quality products that meet and exceed industry standard performance guidelines, in all conditions. BURNDY has an American-made solution for virtually every grounding application.

HYGROUND® COMPRESSION

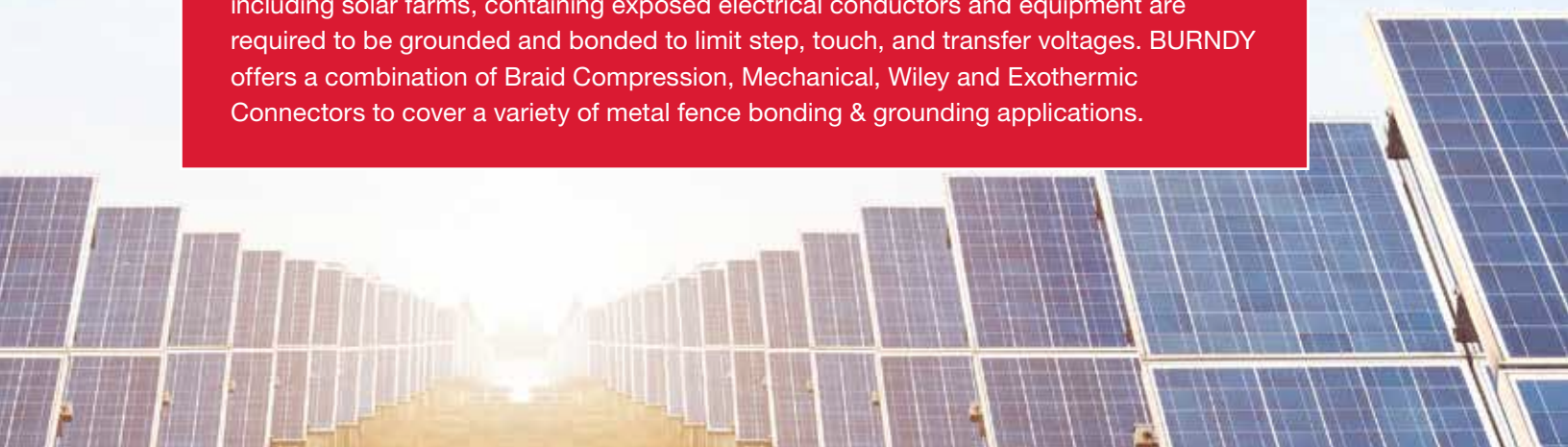
- BURNDY® HYGROUND® is the safest, most cost-effective, time-efficient and easily inspected grounding system available today. A BURNDY HYGROUND compression connection can be made in three minutes.
- The efficiency and consistency of installing a BURNDY HYGROUND compression grid translates to tremendous labor savings.



BURNDY HYGROUND helps you keep your entire jobsite on schedule. Compression connections can be made in even the most inclement weather conditions— rain, wind or snow.

FENCE POST GROUNDING

Fence grounding systems are designed to provide protection against hazardous voltage. Metal fencing surrounding substations and other types of supply stations, including solar farms, containing exposed electrical conductors and equipment are required to be grounded and bonded to limit step, touch, and transfer voltages. BURNDY offers a combination of Braid Compression, Mechanical, Wiley and Exothermic Connectors to cover a variety of metal fence bonding & grounding applications.



MECHANICAL

Our easy-to-install mechanical grounding products are known for their quality and durability in even the most extreme conditions. **BURNDY® connectors are designed to last for the life of an electrical grounding system— 40 years or more.**



thermOweld® EXOTHERMIC

The industry-leading line of exothermic grounding products and accessories is well documented: the safety of the contained, high-temperature reaction; the irreversible connection; the lack of loosening or corrosion at the weld site; and no need for an outside power source.



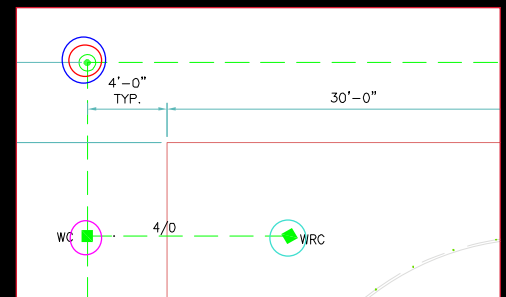
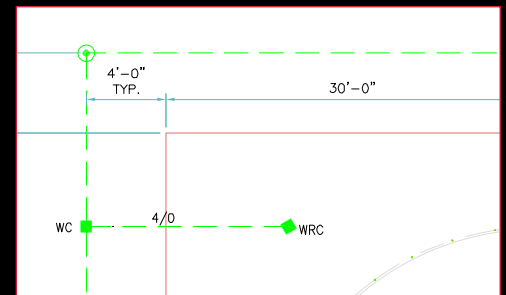
FLEXIBLE GROUNDING

BURNDY® Braid Assemblies are an economical and efficient means of protecting electrical equipment from the potentially harmful effects of shock and vibration.



FIELD SPECIFICATIONS

The BURNDY Grounding Take Off Team provides project take offs for everything from direct burial ground grid connections, power system grounding and steel infrastructure bonding requirements to static discharge and signal reference grid connections as well as complete design and estimation services for lightning protection systems and components.



Our unique Take Offs raise the bar on the level of detail.



POWERING SOLAR

Superior Market Presence

BURNDY leads the solar industry as a global manufacturer of specification grade and brand preferred products.

MEDIUM & LARGE COMPRESSION TERMINALS & SPLICES

BURNDY® HYDENT™ uninsulated copper and aluminum compression terminals and splices are designed to provide a fast and easy installation. As part of the BURNDY® Engineered System, HYDENT™ connectors are marked with the wire size and type; die index; color coding; and the proper number and location of crimps. Once properly installed, the BURNDY® connector is embossed with the die number, making it easy to visually inspect. Other plating, tongue angles and narrow tongue widths are available. Contact BURNDY for information.



WHY USE SHEAR BOLTS? GO WITH THE BURNDY PAT444S SERIES DIELESS BATTERY TOOL!

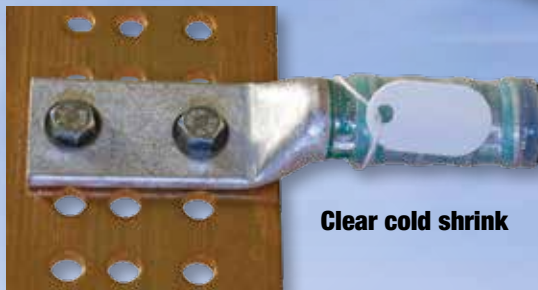
The BURNDY PAT444S requires only one (1) crimp on terminals and splices up to 750 kcmil and two (2) crimps on 1000 kcmil. **No dies necessary and the connection is UL Listed and provided a 5-year warranty. Connections using the PAT444S Series tools are quicker, less expensive, and provide an irreversible high quality connection to ensure it stands the test of time.** Contact your BURNDY Field Representative for a demonstration.

Scan the QR code for a brief video about the BURNDY PAT444S



BURNDY OFFERS A FULL LINE OF BOTH BLACK AND CLEAR COLD SHRINK PRODUCTS.

Our silicon rubber cold shrink tubing using ripcord technology saves labor and overhead costs while improving safety by eliminating the need for a heat gun or torch. Similar to our clear heat shrink, clear cold shrink tubing provides for visual inspection. These cold-applied splice sealing products offer excellent insulation and moisture proof sealing for in-line cable connector systems or elbow to cable jacket applications.



Clear cold shrink



HANDS ON TRAINING WITH OUR BURNDY B.E.S.T. PROGRAM

BURNDY® Engineered System Training (BEST) Program

- Ask your BURNDY Field Representative about our installer training program
- Installers trained on proper techniques to ensure accurate connector-tool-die selection and installation
- Each installer provided with a dated card





BURNDY® TOOLING

Work Smart, Work Strong

At BURNDY, we work every day to provide superior crimping and cutting solutions for our customers. Our goal is to provide the most ergonomic products that allow you to perform your work safely and reliably in accordance with the highest conformance standards in the electrical industry.

THE MARK OF EXCELLENCE

Our dies, connectors and tools, when used together, form a trusted UL Listed connection. We proudly back our UL Listing. We earned it by passing rigorous testing and evaluations that demonstrate compliance with nationally recognized safety standards. **Connections made with the BURNDY® Engineered System are backed with a 5-year warranty.** We stand behind our tools. BURNDY® tools are designed, tested and assembled in the U.S.A. Our PATRIOT® line of battery tools also has a lifetime warranty on the INFINITY DRIVE® transmission.



The BURNDY® UL and CSA Certified Engineering Lab tests our products to many industry and customer standards including UL, CSA, ANSI, IEC, ASTM, IEEE, OSHA and ISO standards.

BURNDY provides comprehensive training on all of our tools and connector products to ensure that proper, inspectable crimps can be performed with confidence every time.

BURNDY® TOOLING SOLUTIONS

- Battery actuated crimping and cutting tools with associated dies (Makita® battery platform)
- Self-contained hydraulic crimping and cutting tools
- Remote hydraulic crimping and cutting tools (i.e., pumps, hoses and heads)
- Low-pressure hydraulic tools (i.e., crimp tools, impact drills, saws, tampers and breakers)
- Wide selection of mechanical and ratchet hand tools

EASILY ACCESSED TOOL REPAIR

- Calibration and repair services for tools and dies
- Localized BURNDY® Tool Service Centers
- Technical application assistance
- Loaner tools



BURNDY T3 TECHNOLOGY



TRACK:
MAP LOCATION
OF CRIMPS



TRACE: FLAG
INDIVIDUAL CRIMPS
WITH COMMENTS



TRANSMIT:
SYNC DATA
TO THE CLOUD





HUBBELL ENCLOSURES

Strength, Performance, Quality & Outstanding Customer Service

Renewable energy applications such as solar power have unique challenges and requirements, so Hubbell is proud to offer a wide selection of enclosures and equipment foundation products. In addition to our core products and options, Hubbell can customize a solution for your project and application.

PRIMARY PEDESTALS (SECTIONALIZING CABINETS)

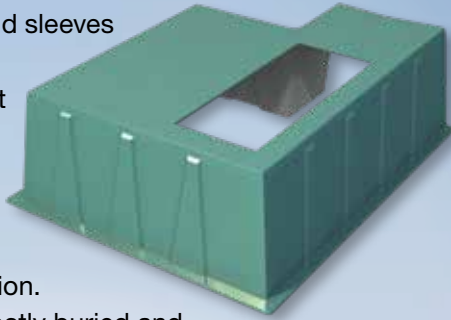
- Materials and manufacturing methods
 - Male vs female molded fiberglass
 - Metal
- Applicable standards and application
 - IEEE C57.12.28 & 12.29
 - One-piece integrated design



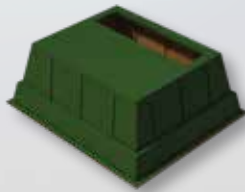
BOX PADS & GROUND SLEEVES

Hubbell box pads and ground sleeves typically provide a means to securely anchor and support the weight of pad-mounted electrical equipment. The large, open interior also affords for additional cable looping and ease of installation.

They are designed to be directly buried and protect against frost heave where applicable. Hubbell provides a full line of box pads and ground sleeves utilizing different materials to meet your needs.



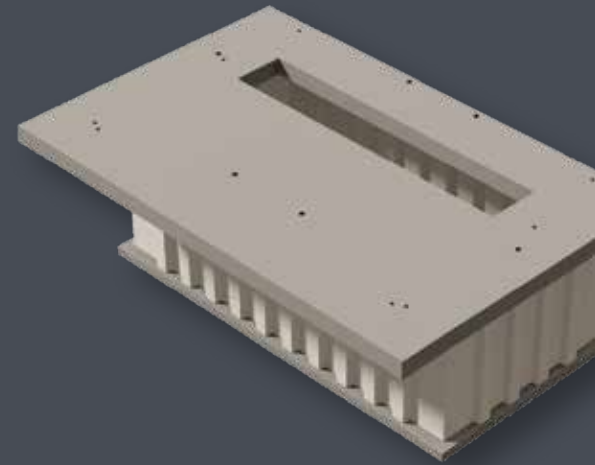
- NEUC load rated
- Smooth gel-coat or polymer concrete exterior for best equipment mating surface
- Materials of design include:
 - Quazite Polymer concrete
 - Hubbell FRP Fiberglass
 - Hubbell FRP Hard-top hybrid and pad-vault designs
- Load rated up to 16,000 lbs
 - Heavier designs upon request
- Seismic designs available
- Chuted solar farm specific designs



CABLE VAULTS & PADS

Hubbell cable vaults and pads are a two-piece system designed to work with pad-mounted switchgear or transformers. They provide both a foundation for cabinet mounting as well as a ground sleeve for cable looping and protection. Derived from a corrugated fiberglass base and polymer concrete flat pad top, Hubbell cable vaults and pads are a lightweight alternative to pre-cast or pour-in-place concrete alternatives.

- Load rated per application
- Polymer materials won't rust or corrode
- Highly customizable



HUBBELL OFFERS FULL-SERVICE CUSTOM KITTING

When you partner with Hubbell, your cabinets can arrive on the jobsite with the junctions, T-body kits, elbows, grounding connectors and accessories factory mounted and ready to go. Hubbell saves you money, time and hassles!



HUBBELL CABLE ACCESSORIES

Step It Up with the 35kV 600A Product Family

Solar farms often step the voltage from the arrays up to 35kV within the transformer at the inverter. To accommodate this growing need, Hubbell Power Systems provides a reliable line of cable accessories for underground cable construction and surge protection.

T-BODY KITS

- Mates to IEEE Std. 386 Interface 13
- 200kV BIL rated
- Can be installed on conductors ranging from #2AWG to 1250 kcmil
- Fits on cables with insulation diameters from 0.750" to 2.145"



JUNCTIONS

- Uses IEEE Std. 386 Interface 13
- 200kV BIL rated
- Available in 2, 3 or 4 positions
- Available with 4" or 6" centers
- Mountable with stainless steel bracket or U-straps



200A ELBOW ARRESTERS

Limits over voltages to acceptable levels, protecting equipment and extending service life.

Note: HPS 35kV Elbow Arresters utilize IEEE 386 Interface 7B (200A, 35kV Small Interface) and the use of a reducing tap plug (635ETP) would be required for application.





OTHER ACCESSORIES

REDUCING TAP PLUGS

- Adds a 200A loadbreak interface to an existing 600A deadbreak T-body
- Interface used for testing, grounding or addition of arrester protection



BUSHING EXTENDERS

- Provides an extended 600A 35kV Interface for use in a crowded cabinet



INSULATING CAPS

- Provides a temporary or permanent cover for an energized operating interface



SHEAR BOLT CONNECTORS

- No crimping tools or dies are required
- Hex head will shear off at the right torque every time
- Can be used on a wide range of conductor sizes
- Will work regardless of conductor type (solid, stranded, compact, etc.)
- Four connectors cover #2 AWG through 1250 kcmil sized conductors



COLD SHRINK SEAL KITS

- Prevents moisture intrusion into cable jacket



INSTALLATION TRAINING

Proper installation is vital in the performance and long-term reliability of our products. Outages and disruptions to the electrical system most often occur when a product has been installed incorrectly. Installation training from Hubbell experts can help prevent these costly disruptions. Our hands-on training gives your installers the skills necessary to increase network reliability and reduce cost of ownership. By partnering with Hubbell, we will train your electrical installation teams wherever and whenever you need it.

For more information
or to locate your local
Hubbell BURNDY Factory
Sales Representative,
visit www.hubbell.com

BURNDY, LLC

47 East Industrial Park Drive
Manchester, NH 03109
1-800-346-4175
1-603-647-5000

CANADA

1-800-465-7051

MEXICO

011-52-722-265-4400

HUBBELL LENOIR CITY, INC

2911 Industrial Park Drive
Lenoir City, TN 37771
865-986-9726

www.hubbell.com

