

SOLAR POWER SOLUTIONS



Grounding, Lightning Protection, Electrical Connection and Cable Management Solutions for the Solar Power Industry

Pentair offers a wide range of products for the solar market. In addition to an extensive product offering, Pentair engineers and designers can provide design assistance for many solar installation aspects of your facilities worldwide.

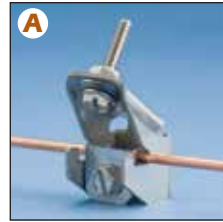
The megawatts of solar energy produced continues to increase globally. More countries have focused resources on this valuable endeavor. Solar photovoltaic power systems include modules, inverters, rack mounting components, monitoring systems for off-grid systems, batteries and charge controllers. Solar power systems are designed to be in service for periods of 30 years or more, therefore it is imperative to construct the systems with products that are designed to help provide efficient operation for the lifetime of the installation. Pentair is uniquely positioned to provide the necessary products, components and services for solar programs worldwide.

Years of experience in the fields of grounding and bonding, lightning protection, low-voltage power distribution, fastening and support and reinforced concrete construction, combined with global manufacturing capabilities, allow Pentair to provide comprehensive solutions for the solar market. Four of our product lines have joined together to offer a full range of solutions: ERICO facility electrical protection products, ERIFLEX low-voltage power distribution products, LENTON concrete reinforcement products and CADDY fixings, fasteners and supports.

Pentair's products are technically superior, meet or exceed international and industry code requirements and help prolong service life. As a global organization, Pentair is experienced with regional codes, standards and practices, including OEM specs.



ERICO Lightning Protection Systems



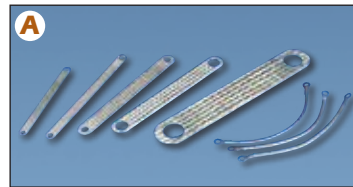
Solar Bonding Lugs



Grounding Accessories



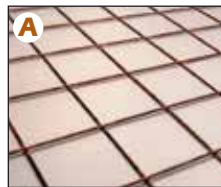
RIGD and SK Series Strut Clamps



MBJ Grounding Braids



Copper-bonded Ground Rods



Equipotential Ground Mesh



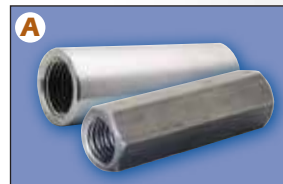
Intersystem Bonding Termination (IBTB)



SCH Series Strut Clamps



LENTON TERMINATOR



Bolt Couplers



CADDY PYRAMID

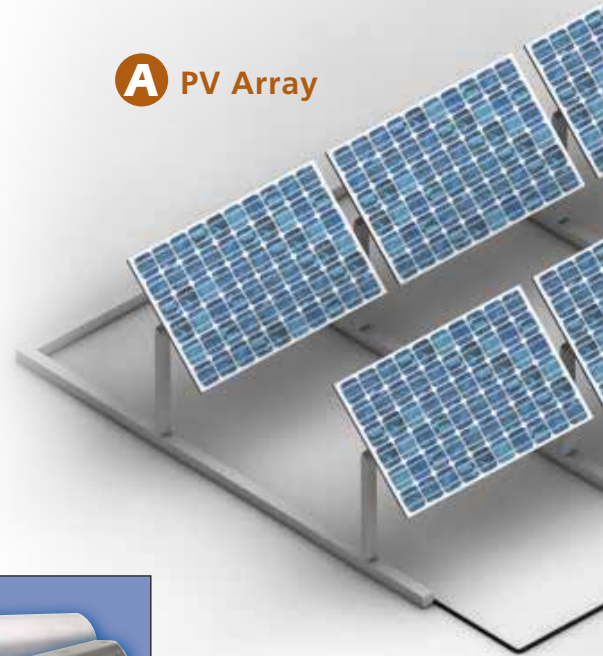


CADWELD Exothermically Welded Connections



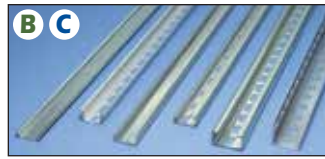
Ground Enhancement Material

PV Array





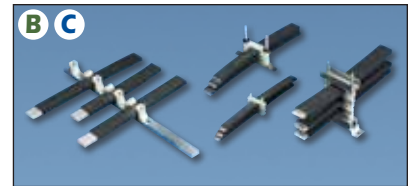
ERIFLEX FLEXIBAR



DIN Rail Profiles



Low Voltage Insulators



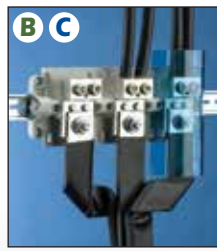
ERIFLEX FLEXIBAR Supports



Equipment Grounding Bus Bars



TDS50 DC Surge Protection Devices



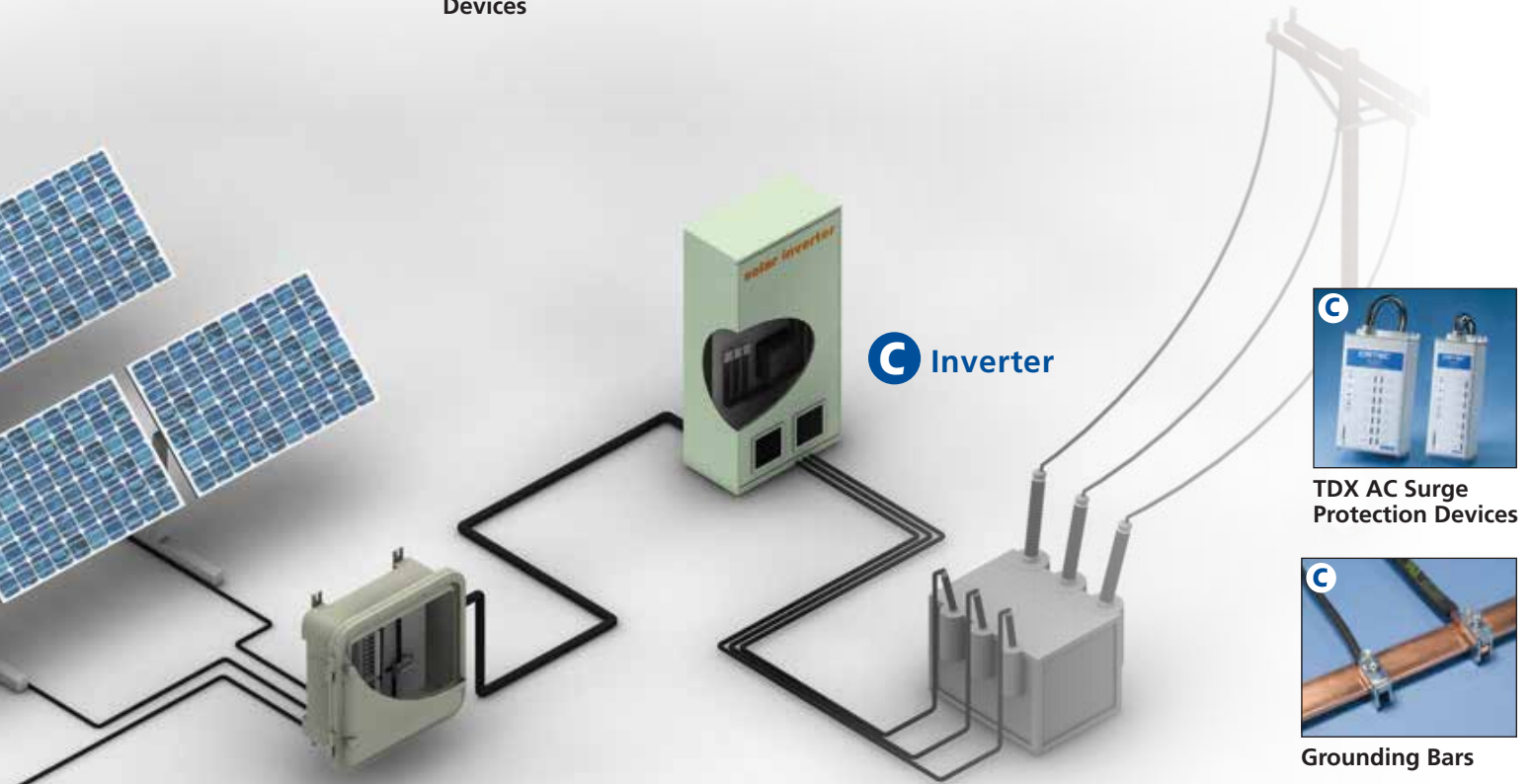
Power Terminals



Power Blocks/Splice Blocks



Distribution Blocks



B Combiner Box

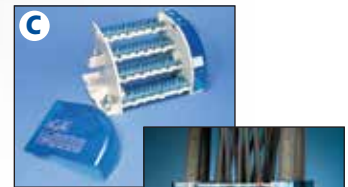
C Inverter



TDX AC Surge Protection Devices



Grounding Bars



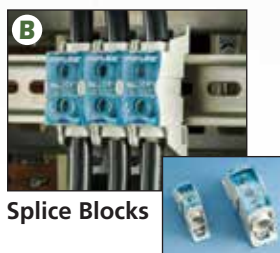
Two and Four Pole Distribution Blocks



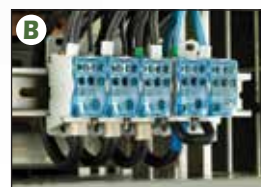
Terminal Strip



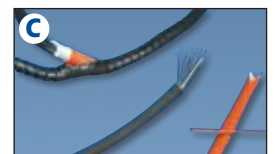
Insulated Braided Shunt



Splice Blocks



Distribution Blocks



Cabling Sleeves

Pentair offers a full line of products to help protect PV modules from the damaging effects of lightning and other transient events. ERICO lightning protection products include systems and components designed to meet the requirements of lightning standards worldwide.

1. Solar Bonding Lugs

ERICO brand of solar bonding lugs are designed to bond the frames and mounting structures of solar photovoltaic systems in accordance with NEC® and UL® requirements. These UL 467 listed lugs are corrosion resistant and galvanically compatible with copper grounding conductors and aluminum photovoltaic module frames.

The stamped lug has a lay-in feature that allows the positioning of the grounding conductor along multiple frames prior to securing the wire. For accessibility and faster installation, the lug features a unique offset angle and spring-held clamp.

Lightning Protection Systems

Pentair manufactures lightning protection systems in full accordance with more than twelve national and international standards, including systems based on optimized air terminals and placement as well as isolated conductor systems.

2. ERICO SYSTEM 3000: ERICO DYNASPHERE air terminal, ERICO ERICORE downconductor, lightning event counter and purpose-designed low-impedance grounding system designed to capture the lightning discharge and conduct the energy to ground without sideflash to surrounding equipment.

3. ERICO SYSTEM 2000 includes a series of air terminals, downconductors and fittings that are specifically designed in accordance with the NFPA® 780-2011 and UL96/UL96A standards.

4. Grounding Braids and Jumpers

ERIFLEX brand of grounding braids and jumpers consist of tinned, electrolytic, copper, aluminum or stainless steel wire and provides a permanent ground path without breaking, fraying, or weathering. The braids and bonding jumpers can be supplied with integrated palms with hole-punched ends, lugs or sleeves for easy connection. Because of their low contact resistance, they are adapted to decrease EMC problems.

Pentair can provide made-to-order custom configurations to your drawing specifications. Braids can be made to custom lengths, widths, thicknesses and hole patterns, with PVC insulation, in flat or tubular shapes, in continuous coils or with soldered or crimped lugs.

5. Equipotential Ground Mesh

ERICO brand of prefabricated wire mesh / mats are convenient, efficient and economical for grounding wherever large area equipotential grounds are required. Manufactured from solid copper or copper-clad wire, the intersections of the crossing wires are silver brazed with high-temperature braze filler to provide high strength tolerance during installation and durability in the ground, outstanding electrical conductivity and corrosion resistance.

6. Ground Rods

Pentair offers a complete line of ground rods and accessories as part of the ERICO line of facility electrical protection products. Copper-bonded ground rods exceed the requirements of ANSI®/UL. They are also highly corrosion resistant and provide at least a 30-year service life in most soils.

7. CADWELD Exothermically Welded Connections

The CADWELD molecular bonding process is superior in performance to any known mechanical or compression-type surface-to-surface contact connector. CADWELD connections provide current carrying (fusing) capacity equal to that of the conductor and will not deteriorate with age. CADWELD connections are UL Listed and satisfy IEEE® Standard 837.

8. Ground Enhancement Material

Ground Enhancement Material (GEM) is a low-resistance cementitious carbon backfill that improves grounding effectiveness in areas of poor conductivity and will maintain a constant resistance for the life of the grounding system.

9. Grounding Accessories

The durable RC70/RC100 rebar clamps provide two connection points to rebar in the pole-mounted PV array foundation grounding.

10. Bolt Couplers

Bolt couplers, part of the LENTON line of concrete products, provide a full-strength joint between a reinforcing bar and a standard parallel thread bolt. The S4 and S13 couplers provide continuity between reinforcing bar and all-thread rod and bolts. The bolt couplers are typically used to tie a pedestal base to the foundation and to anchor miscellaneous equipment to the foundation.

11. LENTON TERMINATOR

LENTON TERMINATOR is an oversized half coupler that secures to the end of reinforcing steel and efficiently replaces conventional hooked rebar. This unique embedment anchor reduces congestion and is designed for use on rebar sizes #4 (12 mm) through #18 (57 mm) and meets most international building codes.

12. Pipe Clamps

The UL® Listed CWP Grounding Clamp connects fittings, grounding conductors, or ground rods to a ground conductor to bond all ground points together, eliminating ground loops and creating an equipotential plane. This clamp allows the ground conductor to dissipate energy into a low-impedance grounding system to help protect the facility, equipment and personnel when lightning or other transient voltages occur.

PV Array



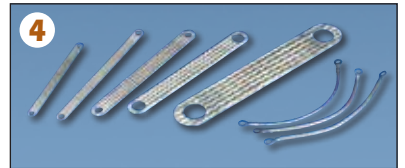
1
Solar Bonding Lugs



2
ERICO SYSTEM 3000



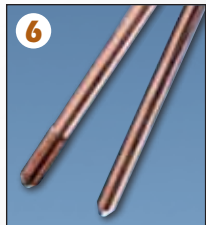
3
ERICO SYSTEM 2000



4
MBJ Grounding Braids



5
Equipotential Ground Mesh



6
Ground Rods



7
CADWELD Exothermically Welded Connections



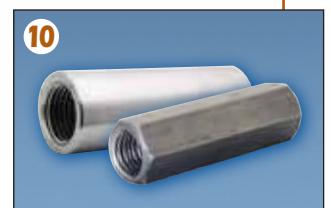
8
Ground Enhancement Material



12
Pipe Clamps



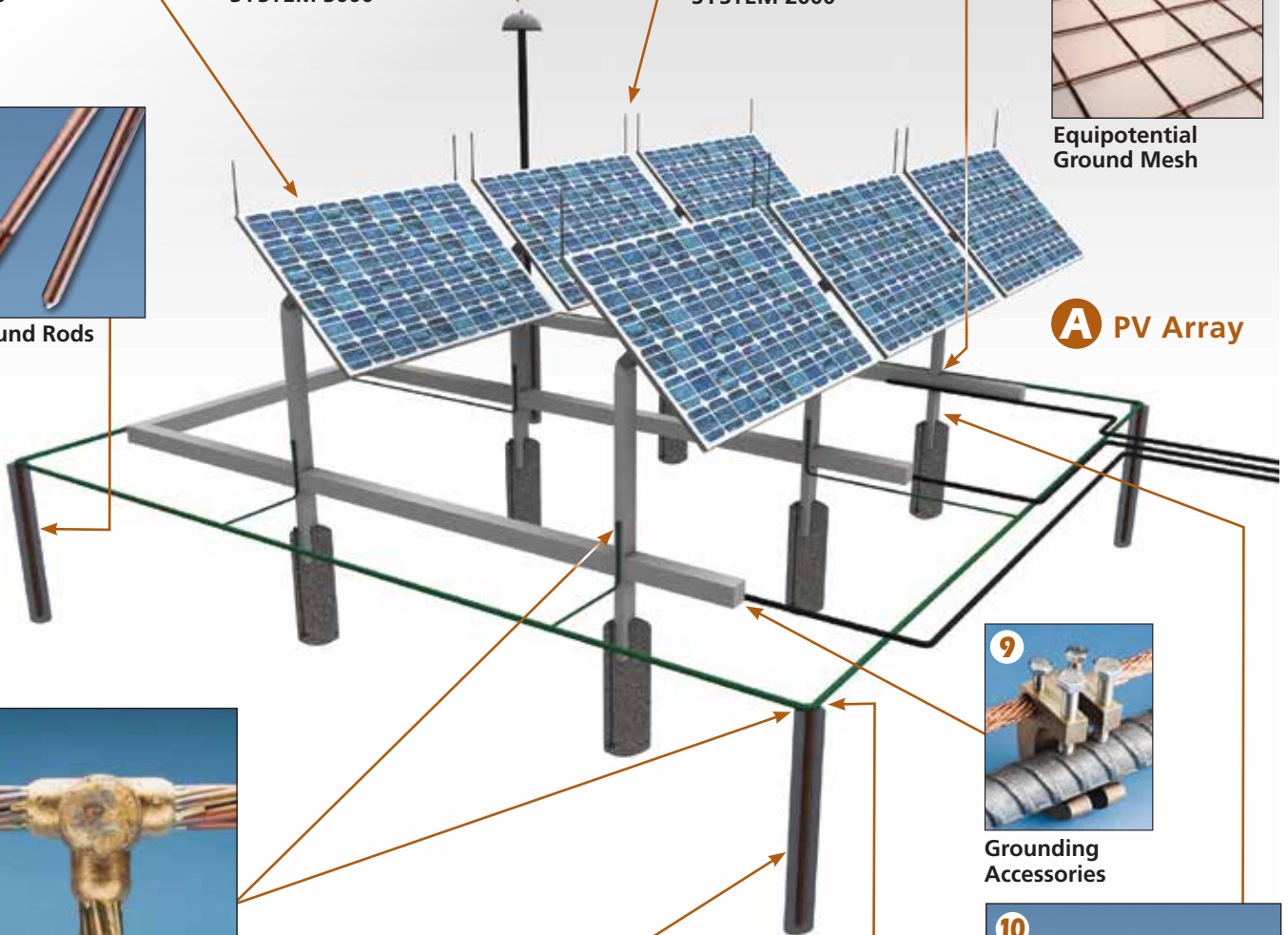
9
Grounding Accessories



10
Bolt Couplers



11
LENTON TERMINATOR



A PV Array

13. InterSystem Bonding Termination (IBTB)

Designed to meet the requirements of 2008 NEC® Article 250.94 "Bonding for Other Systems," the IBTB is an easy-to-install way to interconnect and terminate grounding conductors from a roof top solar system with those from the electric power service, telephone, CATV, radio and television antennas and other systems that may be added later.

14. RIGD and SK Series Strut Clamps

The CADDY brand of one-piece strut clamps feature a retained bolt and built-in nut to help simplify handling and installation. They are specifically designed to handle heavy loads.

15. SCH Series Strut Clamps

The CADDY brand of SCH series one-piece strut clamps provides one of the fastest methods for attaching EMT or flexible conduit to channel. Heavy duty construction with a bright zinc finish, all sizes are available with a load distribution plate attached to screw.

16. CADDY CUSHION CLAMP TCC

CADDY CUSHION CLAMPS are ideal for multiple runs while absorbing shock and vibration, reducing unwanted noise and preventing galvanic corrosion. The clamps have an EG finish, fit any standard 1-5/8" (41 mm) wide strut channel, and the interlock design helps ensure that the cushion remains in place.

17. CADDY PYRAMID ST Series Strut-based Thermoplastic Rooftop Supports

utilize an engineered thermoplastic base with a UV stabilizer. They have a high load rating – up to 1,500 lbs (6,671N) – and provide uniform load distribution to help protect the roof membrane. Available as a fixed strut support, which provides a fixed-height mounting platform 4" (104 mm) or 6" (152 mm) off the roof surface and 10" (254 mm) or 16" (406 mm) of usable strut length, or as an adjustable-height strut support, which allows elevation change up to 17" (432 mm) off the roof surface with up to 10" (254 mm) or 16" (406 mm) of usable strut length.

18. CADDY PYRAMID RL Series Roller-based Thermoplastic Rooftop Supports

feature a roller capability to allow for longitudinal movement of pipe, such as from thermal expansion or contraction. The supports can accommodate elevation changes on the roof and are designed to keep conduit away from higher ambient temperature, as required by code in many areas.

The CADDY PYRAMID RL Series is available as a fixed roller support, which provides roller capability for up to 6" (150DN) nominal pipe with 5.5" (140 mm) fixed height, or an adjustable-height roller support, which can accommodate elevation changes of up to 16" (406 mm) off the roof with up to 6" (150DN) diameter (Nom.) pipe.

19. CADDY PYRAMID 50 is an easy-to-install rooftop support that features a versatile, strut-like profile for easy fixing and fastening. It consists of a foam block, which absorbs shock and vibration, and a metal top for protection from weather and other environmental conditions. An electro-galvanized finish on the cover offers superior corrosion protection.

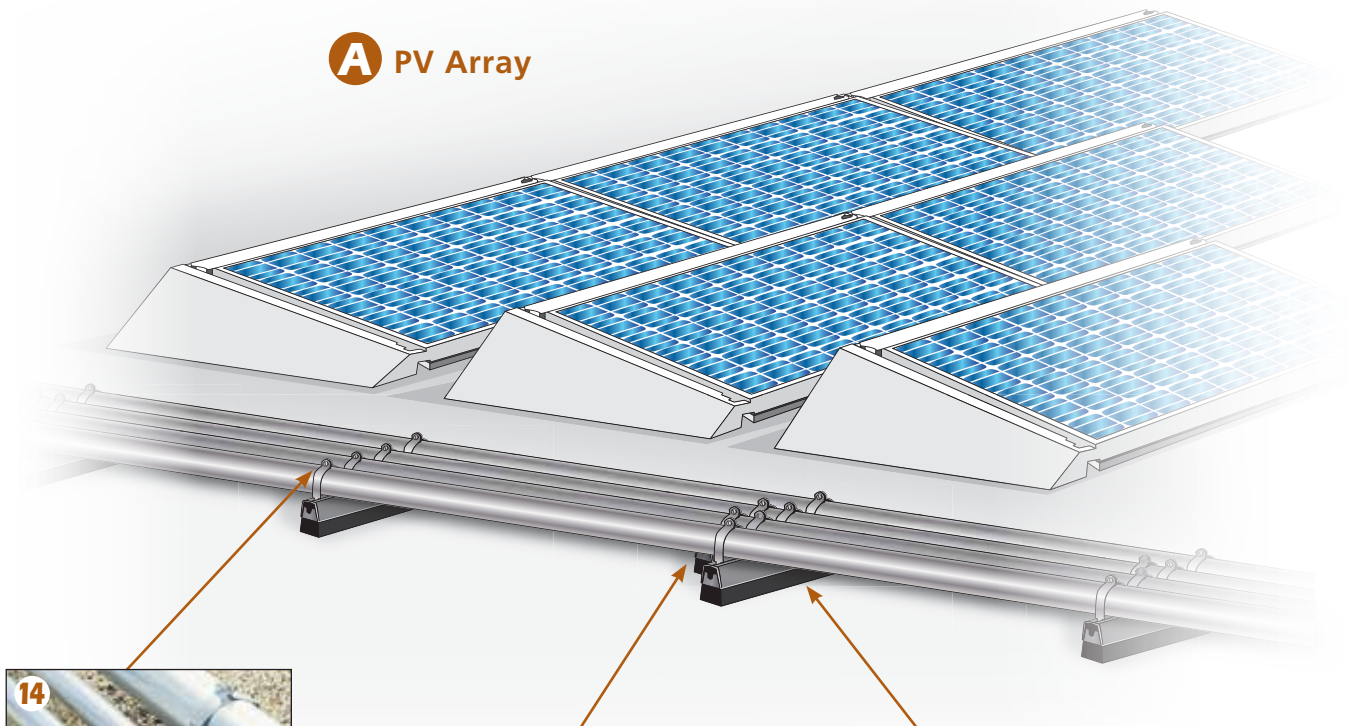
20. CADDY PYRAMID Column Supports

Attach directly to strut, which can be cut to length on site as required for the installation.



13
Intersystem Bonding Termination (IBTB)

A PV Array



14
RIGD and SK Series Strut Clamps



15
SCH Series Strut Clamps



16
CADDY Cushion Clamps



17 18 19 20
CADDY PYRAMID

Combiner Box

Pentair offers a wide variety of products for use on DC systems, including surge protection products and low-voltage power distribution products, such as distribution blocks, metallic braids, terminal strips, insulators and DIN rail profiles. All of these products have proven reliability and are ideal for PV subcombiner and combiner box applications.

1. TDS50 DC Surge Protection Devices

The TDS50 series of surge protective devices is designed to provide economical and reliable protection from voltage transients on solar PV systems. The series consists of models suited to systems from 24VDC up to 1000VDC, specifically designed for the DC voltage systems and are conveniently packaged for easy installation in combiner boxes or inverters. They feature internal thermal disconnect devices and a visual indicator flag that clearly notifies the user when the disconnect device has been engaged and the surge module is no longer functioning. The devices also utilize UL® 1449 Ed. 3-recognized replaceable modules and are CE marked.

2. ERIFLEX FLEXIBAR

ERIFLEX FLEXIBAR is an effective alternative to using cables and lugs to help improve power density and offer space and weight savings. By eliminating the need for compression lugs, ERIFLEX FLEXIBAR improves the reliability of the power connection and reduces the number of power connections that are needed. It also extends power density to even greater levels using made-to-order (MTO) ERIFLEX FLEXIBAR or MTO braids. MTO products from Pentair can be configured to your specifications.

3. Insulated Braided Shunt

The Insulated Braided Shunt is a cost-effective alternative to using large and small diameter electrical cable because it requires less copper to achieve comparable ampacity and it eliminates the need for lugs or intermediate connection devices.

This highly flexible connection consists of tinned electrolytic copper wire and is pre-punched at both ends in solid palms for easy connection. It is insulated using a flexible PVC, provides excellent electrical contact and tensile strength and is tested and certified.

4. Low-Voltage Insulators

ERIFLEX brand of UL-recognized low-voltage insulators are manufactured from a halogen-free unsaturated polyamide reinforced with 30% minimum glass fiber. The insulators meet the requirements of UL 94 VO for self-extinguishing materials and work in temperatures from -40°F to 266°F (-40°C to 130°C). They offer a very high resistance to leakage current and have bichromated galvanized steel inserts.

5. Distribution Blocks

Single-pole distribution blocks are IP 20, finger safe and have a 100 kA Short Circuit Current Rating. They are 1000 V AC/DC IECsm and 600 V UL. Cost competitive with conventional, finger-safe blocks, the distribution blocks easily clip onto DIN rail or mount to panels with screws, and are tested and compliant with IEC 60947-7-1 and UL 1059. Ranging from 85 A to 335 A, 600 V UL, 80 A to 500 A, 1000 V AC/DC IEC.

6. Power Blocks/Splice Blocks

These easy-to-use halogen free products provide a high-quality, reliable connection between two electrical circuits, such as cables in the panel. Power blocks are the entry point for incoming power, which is carried to the inverter. The tinned copper block provides high conductivity, and the adjustable transparent cover offers visual inspection of wire and confirmation of connection. They are IEC certified and UL recognized, short circuit rated up to 100 kA. Self extinguishing: UL94 V-0, RoHS compliant.

7. Power Terminals

Power terminals provide a high-quality, reliable connection between two electrical circuits, such as cables and/or ERIFLEX FLEXIBAR in the panel.

The halogen free power terminals easily clip onto DIN rail or mount to panels with screws. They are tested and compliant with IEC 60947-7-1 and UL 1059, and are RoHS compliant. Ranging from 255 A to 800 A, 1000 V UL, 250 A to 1250 A, 1000 VAC/1500 VDC IEC. Short circuit current rated up to 100 kA, UL file E198301. They feature an adjustable hinged cover that is constructed of self-extinguishing UL-V0 plastic. The tinned copper blocks have a fill ratio of greater than 95% and are UL-Recognized.

8. DIN Rail Profiles (DR, PDR)

DIN rail profiles feature bichromated galvanized steel and offer high mechanical resistance and high corrosion resistance. The DIN rail is available in symmetric profiles and perforated symmetric profiles and conforms to EN 50035, 50022, DIN 46277.

9. ERIFLEX FLEXIBAR Supports

The supports are made of glass fiber reinforced polyamide and are halogen free. These products are designed to help ensure correct support for ERIFLEX FLEXIBAR without damage to the insulation.

Combiner Box



1
TDS50
DC Surge
Protection
Devices



2
ERIFLEX FLEXIBAR



3
Insulated
Braided
Shunt



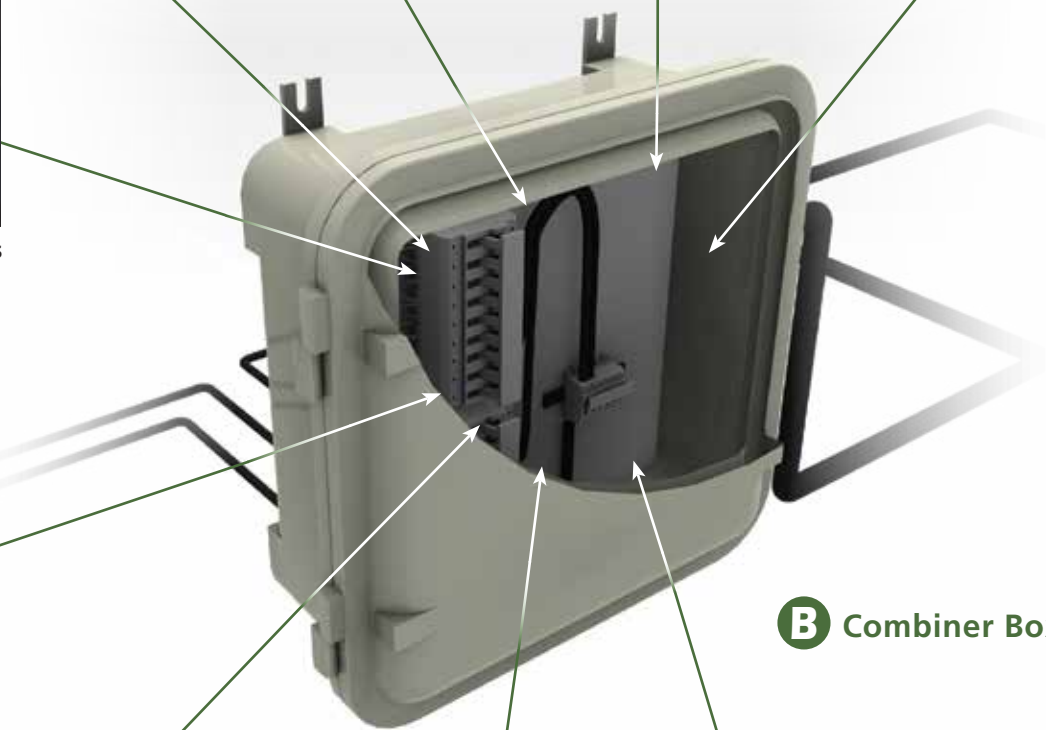
4
Low-Voltage
Insulators



5
Distribution
Blocks



6
Power Blocks/
Splice Blocks



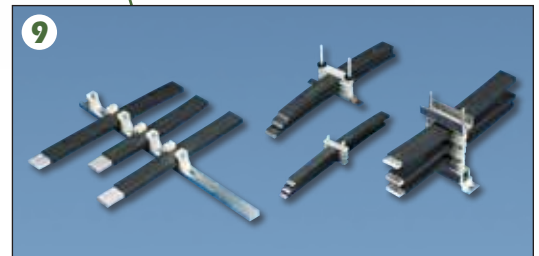
B Combiner Box



7
Power
Terminals



8
DIN Rail
Profiles



9
ERIFLEX FLEXIBAR
Supports

Pentair's products for solar inverters include surge protection devices, insulated flexible bus bar, splice blocks, distribution blocks, metallic braids, terminal strips, cable sleeves, insulators and DIN rail profiles.

On the AC side, Pentair offers a full line of DIN-mounted and panel-mounted surge protective products for various system voltages and surge rating requirements. And, Pentair's proven experience in providing grounding and bonding systems provide for personnel safety, as well as equipment and facility protection.

1. TDS50 DC Surge Protection Devices

The TDS50 series of surge protective devices is designed to provide economical and reliable protection from voltage transients on solar PV systems. The series consists of models suited to systems from 24VDC up to 1000VDC, specifically designed for the DC voltage systems and are conveniently packaged for easy installation in combiner boxes or inverters. They feature internal thermal disconnect devices and a visual indicator flag that clearly notifies the user when the disconnect device has been engaged and the surge module is no longer functioning. The devices also utilize UL® 1449 Ed. 3-recognized replaceable modules and are CE marked.

2. TDX AC Surge Protection Devices

By using Transient Discriminating (TD) technology, the TDX Compact Series provides long life, even under the most adverse, over-voltage condition. With maximum surge ratings of 50 kA or 100 kA 8/20 μ s (depending on the model), protection is suitable for sub-distribution panels.

The TDX Modular Series is designed for critical protection applications. The modular design allows individual modules to be field replaceable. The 100 kA or 200 kA 8/20 μ s of surge protection (depending on the model) exceeds the IEEE C62.41.2 Scenario II single-shot surge rating requirements for exposed service entrance locations.

3. ERIFLEX FLEXIBAR

ERIFLEX FLEXIBAR is an effective alternative to using cables and lugs to help improve power density and offer space and weight savings. By eliminating the need for compression lugs, ERIFLEX FLEXIBAR improves the reliability of the power connection and reduces the number of power connections that are needed. It also extends power density to even greater levels using made-to-order (MTO) ERIFLEX FLEXIBAR or MTO braids. MTO products from Pentair can be configured to your specifications.

4. Insulated Braided Shunt

The Insulated Braided Shunt is a cost-effective alternative to using large and small diameter electrical cable because it requires less copper to achieve comparable ampacity and it eliminates the need for lugs or intermediate connection devices.

This highly flexible connection consists of tinned electrolytic copper wire and is pre-punched at both ends in solid palms for easy connection. It is insulated using a flexible PVC, provides excellent electrical contact and tensile strength and is tested and certified.

5. Low-Voltage Insulators

ERIFLEX brand of UL-recognized low-voltage insulators are manufactured from a halogen-free unsaturated polyamide reinforced with 30% minimum glass fiber. The insulators meet the requirements of UL 94 VO for self-extinguishing materials and work in temperatures from -40°F to 266°F (-40°C to 130°C).

They offer a very high resistance to leakage current and have bichromated galvanized steel inserts.

6. Distribution Blocks

Single-pole distribution blocks are IP 20, finger safe and have a 100 kA Short Circuit Current Rating. They are 1000 V AC/DC IECsm and 600 V UL. Cost competitive with conventional, finger-safe blocks, the distribution blocks easily clip onto DIN rail or mount to panels with screws, and are tested and compliant with IEC 60947-7-1 and UL 1059. Ranging from 85 A to 335 A, 600 V UL, 80 A to 500 A, 1000 V AC/DC IEC.

7. Two and Four pole distribution blocks feature an easy connection and improved design with solid bars for greater reliability. The halogen free two and four pole distribution blocks are IP 10, hand safe. They easily clip onto DIN rail or mount to panels with screws, are tested and compliant with IEC 60947-7-1.

Ranging from 40A to 400 A, 500 V to 1000 V IEC and short circuit withstanding up to 51 kA, they feature a hinged cover that is constructed of self-extinguishing UL-V0 plastic, which makes it easier to inspect the wire and confirm the connection.

8. Power Blocks/Splice Blocks

These easy-to-use halogen free products provide a high-quality, reliable connection between two electrical circuits, such as cables in the panel. Power blocks are the entry point for incoming power, which is carried to the inverter. The tinned copper block provides high conductivity, and the adjustable transparent cover offers visual inspection of wire and confirmation of connection. They are IEC certified and UL recognized, short circuit rated up to 100 kA. Self extinguishing: UL94 V-0, RoHS compliant.

9. Power Terminals

Power terminals provide a high-quality, reliable connection between two electrical circuits, such as cables and/or ERIFLEX FLEXIBAR in the panel.

The halogen free power terminals easily clip onto DIN rail or mount to panels with screws. They are tested and compliant with IEC 60947-7-1 and UL 1059, and are RoHS compliant. Ranging from 255 A to 800 A, 1000 V UL, 250 A to 1250 A, 1000 VAC/1500 VDC IEC. Short circuit current rated up to 100 kA, UL file E198301. They feature an adjustable hinged cover that is constructed of self-extinguishing UL-V0 plastic. The tinned copper blocks have a fill ratio of greater than 95% and are UL-Recognized.

10. Equipment Grounding Bus Bars

Pentair can design and manufacture custom bars to meet specific application requirements. ERICO brand of equipment bus bars are UL 467 Listed. Grounding conductors can be welded to the bar using the CADWELD process or are terminated using lugs.

11. DIN Rail Profiles (DR, PDR)

DIN rail profiles feature bichromated galvanized steel and offer high mechanical resistance and high corrosion resistance. The DIN rail is available in symmetric profiles and perforated symmetric profiles and conforms to EN 50035, 50022, DIN 46277.

12. ERIFLEX FLEXIBAR Supports

The supports are made of glass fiber reinforced polyamide and are halogen free. These products are designed to help ensure correct support for ERIFLEX FLEXIBAR without damage to the insulation.

13. Cabling Sleeves

ERIFLEX brand of cable sleeves are highly expandable for complete wire coverage.

Inverter



1
TDS50
DC Surge
Protection
Devices



2
TDX AC Surge
Protection
Devices



3
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FLEXIBAR



4
Insulated
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5
Low-Voltage Insulators



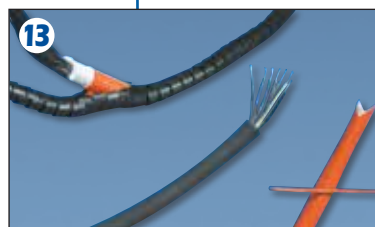
6
Distribution Blocks



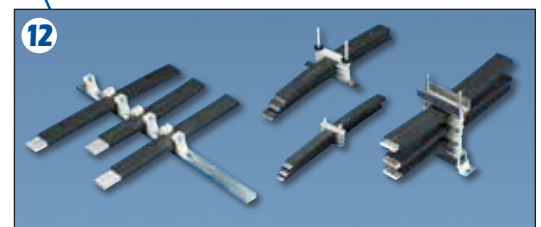
7
Two and
Four Pole
Distribution
Blocks



8
Power Blocks/
Splice Blocks



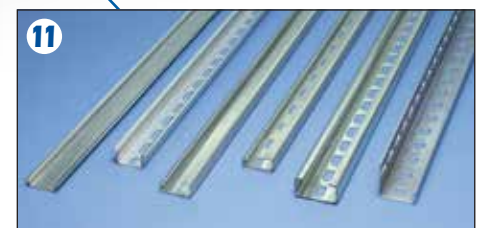
13
Cabling Sleeves



12
ERIFLEX FLEXIBAR Supports



10
Equipment Grounding Bus Bars



11
DIN Rail Profiles



9
Power Terminals

C Inverter

