

# Penn-Union IPBB-S and IPBB-D Aluminum Black Pre-Insulated Power Bars



Penn-Union's Type IPBB Aluminum Black Pre-Insulated Power Bars, with single-side (IPBB-S models) or double-side (IPBB-D models) conductor entry, accommodate two to four conductors in any of the following combinations: AL-to-AL, AL-to-CU, or CU-to-CU. They are suitable for use with aluminum or copper Class B and C stranded wire as well as with copper class G, H, I, K and DLO flexible stranded wire.

They are manufactured from high-strength aluminum alloy and are dual rated for aluminum and copper 90 °C conductors. They are rated and listed for parallel use using copper and aluminum class B and C stranded conductors (4 position only).

These power bars are suitable for use in panelboards, cable trays, raceways, ducts and troughs. They allow flexibility in the field and allow a reduction in the number of connectors which must be kept in inventory.

The single-sided configuration accepts conductors from a single side, while the double-sided configuration allows conductors to be installed from either side of the connector.

## Features

- Dual rated for aluminum and copper conductors (600V, 90 °C)
- Wide conductor range: 600 kcmil to 14 solid
- Sizes 250 kcmil and larger suitable for use on line side of service equipment (SVC)
- Multiple conductor configurations (2, 3 and 4 port)
- Temperature rating of insulation: -40 to +135 °C
- Pre-filled with oxide inhibitor to prevent oxidation while keeping moisture and contaminants from entering contact area
- Supplied with removable access plugs over screw and conductor ports for further protection against contaminants
- Pre-insulated at factory with black UV-resistant high dielectric strength plastisol
- Saves time, eliminates taping, and reduces overall installation costs
- Abrasion and chemical resistant



**IPBB-NA4-2S-1**



**IPBB-NA250-3S-1**

## Standards:

UL 486A-486B,  
"Wire Connectors"  
CSA C22.2 No. 65,  
"Wire Connectors"



460C  
WIRE CONNECTOR  
AL9CU

UL File E12822

**Supplied with removable access plugs on all ports**

**Pre-filled with CUAL-GEL oxide inhibitor**

- Prevents oxidation
- Keeps moisture & contaminants from entering contact area

**Suitable for use on line side of service equipment - SVC**

- Sizes 250 kcmil and larger



**Insulated with black UV-resistant plastisol**

**Listed for use with most standard conductor types**

- Class B & C building wire (AL & CU)
- Class G, H, I, K, and DLO (CU only)

**Available in multiple configurations**

- 2, 3, and 4 port
- Single or dual sided entry

**Rated and listed for use in NEC 310.10 paralleling applications**

- 4 port connectors size 2/0 and larger

# Penn-Union IPBB-S and IPBB-D Aluminum Black Pre-Insulated Power Bars



Penn-Union IPBB Aluminum Black Pre-Insulated Power Bars Selection Guide											
Part Number	Price	Number of Ports	Conductor Entry Type	Conductor Size & Stranding Class (Strand Count / Individual Strand Diameter in Inches)						Tightening Torque (in•lb)	Drawing
				CU / AL		CU Only					
				Class B & C	Class G	Class H	Class I	Class K	Diesel Locomotive Cable (DLO)		
<a href="#">IPBB-NA4-2S-1</a>	\$14.00	2	Single sided	CU or AL 4 Str. - 14 Sol.	#6 (49 / 0.0231) to #14 (49 / 0.0092)	#6 (133 / 0.0140) to #9 (133 / 0.0099)	#6 (63 / 0.0201)	#6 (266 / 0.100) to #9 (133 / 0.0100)	#6 (61 / 0.0201) to #14 (19 / 0.0142)	45 (10-14 AWG)  50 (4-8 AWG)	<a href="#">PDF</a>
<a href="#">IPBB-NA4-3S-1</a>	\$17.50	3									<a href="#">PDF</a>
<a href="#">IPBB-NA4-4S-1</a>	\$20.50	4									<a href="#">PDF</a>
<a href="#">IPBB-NA4-2D-1</a>	\$14.00	2	Dual sided								<a href="#">PDF</a>
<a href="#">IPBB-NA4-3D-1</a>	\$18.50	3									<a href="#">PDF</a>
<a href="#">IPBB-NA4-4D-1</a>	\$20.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-2S-1</a>	\$19.50	2	Single sided	CU or AL 2/0 Str. - 14 Sol.	#1 (133 / 0.0251) to #14 (49 / 0.0092)	#1 (259 / 0.0180) to #9 (133 / 0.0099)	#1 (210 / 0.0201) to #6 (63 / 0.0201)	#1 (836 / 0.0100) to #9 (133 / 0.0100)	#1 (225 / 0.0201) to #14 (19 / 0.0142)	180	<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-3S-1</a>	\$20.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-4S-1</a>	\$23.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-2D-1</a>	\$22.50	2	Dual sided								<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-3D-1</a>	\$24.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA2/0-4D-1</a>	\$28.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA250-2S-1 *</a>	\$22.50	2	Single sided	CU or AL 250 kcmil - 10 Sol.	3/0 (133 / 0.0355) to #10 (49 / 0.0146)	3/0 (259 / 0.0255) to #9 (133 / 0.0099)	3/0 (418 / 0.0201) to #6 (63 / 0.0201)	3/0 (1666 / 0.0100) to #9 (133 / 0.0100)	3/0 (450 / 0.0201) to #10 (27 / 0.0201)	275	<a href="#">PDF</a>
<a href="#">IPBB-NA250-3S-1 *</a>	\$34.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA250-4S-1 *</a>	\$38.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA250-2D-1 *</a>	\$35.00	2	Dual sided								<a href="#">PDF</a>
<a href="#">IPBB-NA250-3D-1 *</a>	\$31.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA250-4D-1</a>	\$43.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA350-2S-1 *</a>	\$36.50	2	Single sided	CU or AL 350 kcmil - 10 Sol.	250 kcmil (259 / 0.0311) to #10 (49 / 0.0146)	250 kcmil (427 / 0.0242) to #9 (133 / 0.0099)	250 kcmil (637 / 0.0201) to #6 (63 / 0.0201)	250 kcmil (2499 / 0.0100) to #9 (133 / 0.0100)	4/0 (550 / 0.0201) to #10 (27 / 0.0201)	275	<a href="#">PDF</a>
<a href="#">IPBB-NA350-3S-1 *</a>	\$42.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA350-4S-1 *</a>	\$46.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA350-2D-1 *</a>	\$37.50	2	Dual sided								<a href="#">PDF</a>
<a href="#">IPBB-NA350-3D-1 *</a>	\$46.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA350-4D-1 *</a>	\$53.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA600-2S-1 *</a>	\$56.00	2	Single sided	CU or AL 600 kcmil - 4 Str.	350 kcmil (259 / 0.0368) to #4 (49 / 0.0292)	350 kcmil (427 / 0.0286) to #4 (133 / 0.0177)	350 kcmil (882 / 0.0201) to #4 (105 / 0.0201)	350 kcmil (3458 / 0.0100) to #4 (420 / 0.0100)	373 kcmil (925 / 0.0201) to #4 (105 / 0.0201)	400	<a href="#">PDF</a>
<a href="#">IPBB-NA600-3S-1 *</a>	\$66.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA600-4S-1 *</a>	\$74.00	4									<a href="#">PDF</a>
<a href="#">IPBB-NA600-2D-1 *</a>	\$62.00	2	Dual sided								<a href="#">PDF</a>
<a href="#">IPBB-NA600-3D-1 *</a>	\$74.00	3									<a href="#">PDF</a>
<a href="#">IPBB-NA600-4D-1 *</a>	\$80.00	4									<a href="#">PDF</a>

\* Suitable for use on line side of service equipment, "SVC"

# Penn-Union IPBB Aluminum Black Pre-Insulated Power Bars (Paralleling)



When working with high ampacity circuits, it is often advantageous to run multiple smaller conductors in a parallel configuration to achieve the required conductor ampacity for the circuit. NEC 310.10(H)(1) states that 1/0 and larger aluminum, copper-clad aluminum, or copper conductors are permitted to be connected in parallel (electrically joined at both ends), as long as the requirements in 310.10(H)(2) through (H)(6) are met. One critical requirement is that the paralleled conductors be terminated in the same manner. Penn-Union's IPBB Aluminum Black Pre-Insulated Power Bars are rated for use in paralleling applications by UL.

## Installation Instructions for Paralleling Applications

Allowable installation configurations include two conductors in parallel when using a 4-position connector.

Maximum current ratings are per UL and the NEC.

The connector/conductor configurations below are compliant with UL and the NEC when installed and operated in accordance with the application criteria in the table below.



**IPBB-NA600-4D-1**

IPBB Paralleling Additional Specifications				
Part Number	Class B and C Stranded Copper and Aluminum Conductor Range for Paralleling Applications	Maximum Number of Conductors in Parallel	Copper Conductor Max Amps	Aluminum Conductor Max Amps
<a href="#"><u>IPBB-NA2/0-4S-1</u></a>	2/0 - 1/0 AWG	2	350A	270A
<a href="#"><u>IPBB-NA2/0-4D-1</u></a>				
<a href="#"><u>IPBB-NA250-4S-1</u></a>	250 kcmil - 1/0 AWG		527A	410A
<a href="#"><u>IPBB-NA250-4D-1</u></a>				
<a href="#"><u>IPBB-NA350-4S-1</u></a>	350 kcmil - 1/0 AWG		657A	514A
<a href="#"><u>IPBB-NA350-4D-1</u></a>				
<a href="#"><u>IPBB-NA600-4S-1</u></a>	600 kcmil - 1/0 AWG		1035A	810A
<a href="#"><u>IPBB-NA600-4D-1</u></a>				

### Notes:

1) The current values for conductor sizes 1/0 - 4/0 AWG are based on the National Electrical Code (NEC), ANSI/NFPA 70, Table 310.16, 75 °C column, multiplied by the number of conductors.

2) The current values for conductor sizes 250 kcmil and larger are in accordance with the NEC, NFPA 70, Sections 392.80(A)(2)(a) and 392.80 (A)(2)(b) for table 310.17, 75 °C column, multiplied by the number of conductors and adjusted as follows:

250 kcmil to 500 kcmil - adjusted to 65 percent

600 kcmil and larger - adjusted to 75 percent

NOTE: CONDUCTOR RANGES MARKED ON THE CONNECTORS ARE FOR NON-PARALLELING APPLICATIONS. ONLY THE CONDUCTOR RANGES NOTED ABOVE ARE APPROVED FOR PARALLELING APPLICATIONS.

# Penn-Union CUAL-GEL and CUAL-AID Oxide Inhibitors



Penn-Union CUAL-GEL and CUAL-AID Selection Guide			
Part Number	Price	Recommended Use	Unit Packaging
<a href="#">1/2PT10CUALGEL-1</a>	\$15.00	CUAL-GEL is for use with conductors, connectors and conduit	8 oz squeeze bottle
<a href="#">1/2PT10NO11C-1</a>	\$18.00	CUAL-AID #11C is for aluminum-to-aluminum, aluminum-to-copper, conduit threads, and bolted applications	8 oz squeeze bottle
<a href="#">1/2PT10NO12C-1</a>	\$27.00	CUAL-AID #12C is for use with compression lugs and splices for aluminum-to-aluminum and aluminum-to-copper in all compression applications. Not for use on threads or bolted applications.	8 oz squeeze bottle

## [1/2PT10CUALGEL-1](#)

### CUAL-GEL

Penn-Union CUAL-GEL is a non-melting, non-petroleum-based compound specifically designed to prevent oxidation and corrosion of aluminum, copper, tin and steel. It offers advanced protection under a variety of environmental conditions.

### Features

- Prevents oxidation and corrosion
- Multiple uses with conductors, connectors and conduit
- Has little or no effect on rubber and other insulating materials
- Easy clean-up with soap and water

## [CUAL-AID #11C](#)

Penn-Union CUAL-AID #11C is a high quality, non-melting, non-petroleum base electrical joint compound with suspended zinc particles. It is for use with compression lugs and splices and is recommended for aluminum-to-aluminum, aluminum-to-copper, conduit threads, and bolted applications.

### Features

- Prevents oxidation and corrosion
- Has little or no effect on rubber and other insulating materials

## [CUAL-AID #12C](#)

Penn-Union CUAL-AID #12C is a high quality compression use compound consisting of a non-melting, non-petroleum base material with suspended zinc particles and abrasive grit. It is for use with compression lugs and splices.

### Features

- Prevents oxidation and corrosion
- Has little or no effect on rubber and other insulating materials

## Easy to Apply

**Connectors:** DO NOT wire-brush the grooves or contact surfaces of plated or grease coated connectors. For unplated, ungreased connectors, wire-brush contact surfaces until bright and clean. Immediately apply compound to the conductive surfaces. Install conductor and finish installation.

**Cable:** Apply compound and wire-brush into strands of aluminum cable. This removes oxide coating from the strands and prevents it from reforming. Install conductor and finish installation.

**Bar:** Wire-brush compound across the surface of the bar to remove oxide coating and finish installation. DO NOT wire-brush plated surfaces; simply apply compound and finish installation.

Properties of CUAL-AID and CUAL-GEL				
Property	Definition	CUAL-GEL	CUAL-AID #11C (With zinc particles)	CUAL-AID #12C (With zinc and grit)
<b>Penetration (Unworked)</b>	The value in accordance with ASTM D217 indicates the consistency of a compound. The higher the number, the softer the compound.	230-270	240-280	220-260
<b>Dropping Point (Min)</b>	The temperature at which the compound passes from semi-solid to liquid state under test conditions	500 °F [260 °C] Non-melting		
<b>Pour Point (Max)</b>	The lowest temperature at which the compound will flow. Pour point is the lubricant's ability to perform in cold conditions.	-10 °F [-23.3 °C]		
<b>Service Temperature Range</b>	After installation, the temperature at which the compound is expected to perform and protect.	-58 to +302 °F [-50 to +150 °C]		