

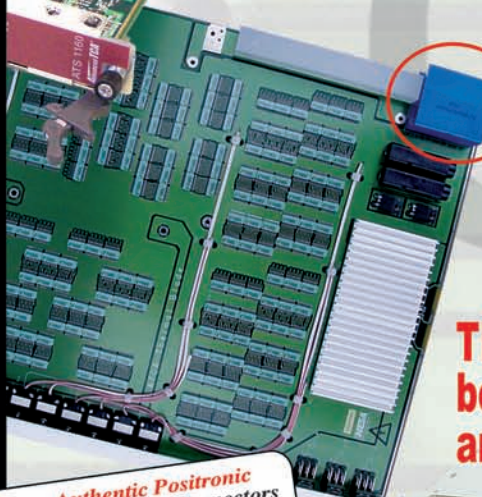
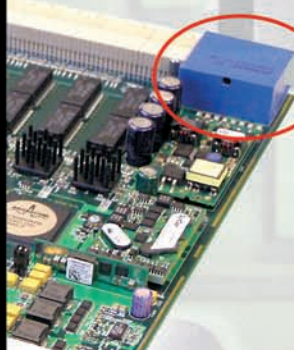
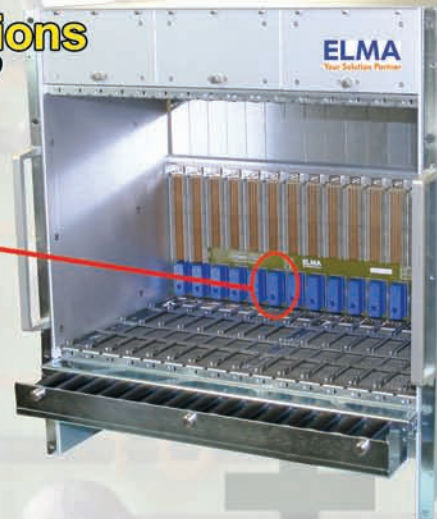
VPB SERIES



POSITRONIC™

GLOBAL *Connector* SOLUTIONS

Compliant to the latest revisions
of PICMG 3.0, **Advanced TCA®**



The dedicated power interface
between plug-in boards
and backplanes



Catalog C-031 Rev. F

Other Front Board Power Connectors

To view all products visit

www.connectpositronic.com

The dedicated power interface
between plug-in boards and backplanes

VPN Series



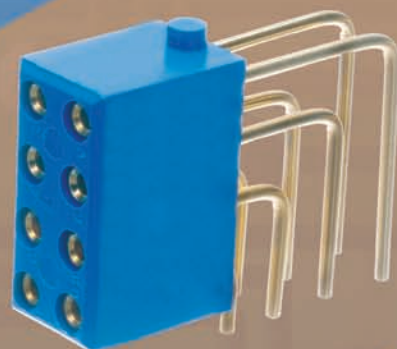
Six power contacts

Three level of sequential mating

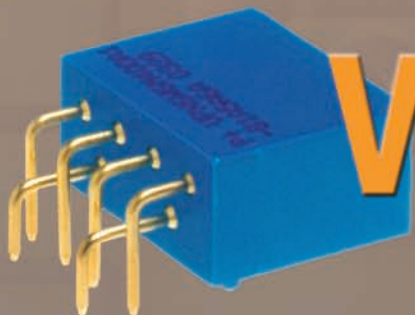
Compatible with IEEE 1101.2 conduction cooled boards

Compatible with popular high speed data connectors,
no notching of the board required

High reliability large surface area contact system



VPX Series



Eight power contacts

Four levels of sequential mating

Compatibility with popular high speed data connectors,
no notching of the board required

High reliability large surface area contact system

Compliant to VITA 41 VXS power connector requirements



Plug-in boards used in today's computing platforms must provide higher reliability, greater functionality and require more power than ever before. Many next generation platforms deliver bulk voltage to boards. DC to DC converters are used to supply the various voltage requirements on the board. This allows systems to adapt as semiconductor voltages change.

The **VPB Series** was developed as a **dedicated interface** between backplanes and boards. The connector is capable of providing dual redundant power, system management and high voltage auxiliary circuits to each slot within the platform. The connector's outstanding blind mating capability can be used to align the board during insertion. The **VPB Series** is **compliant to PICMG 3.0, AdvancedTCA®, Zone 1 connector requirements**.



www.picmg.com



www.advancedtca.com

PICMG and the PICMG logo and/or Advanced TCA® and the Advanced TCA® logo are registered trademarks of the PCI Industrial Computers Manufacturers Group

Products described within this catalog may be protected by one or more of the following US. patents:

#4,900,261	#5,255,580	#5,329,697
#6,260,268	#6,835,079	#7,115,002

Patented in Canada, 1992 Other Patents Pending



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**Positronic Industries' FEDERAL SUPPLY CODE
(Cage Code) FOR MANUFACTURERS is 28198**

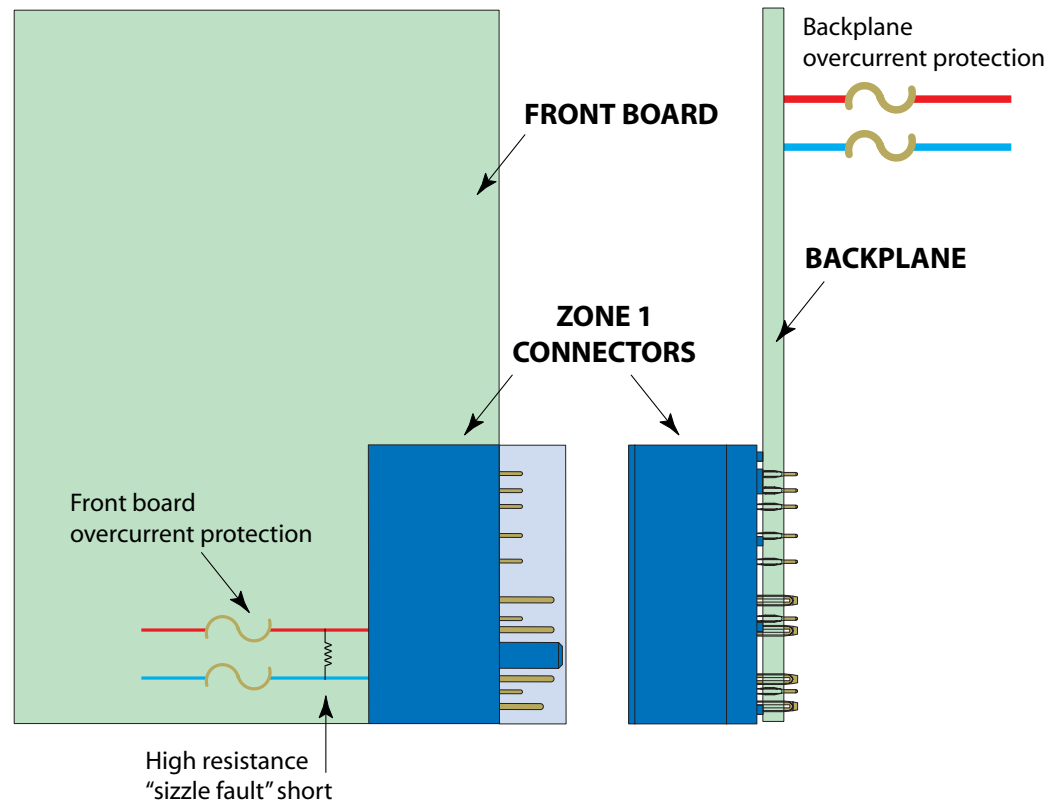
About the cover:

For more information about the products shown on the front cover, visit the following web sites:

- **Elma Electronic** chassis and backplane (top right) <http://www.elma.com/us>
- **Elma Bustronic** backplane (top right) <http://www.elmabustronic.com>
- **Rittal / Kaparel** backplane (top left) <http://www.rittal-corp.com> and www.kaparel.com
- **Diversified Technology, Inc** ATS1160 (middle left) <http://www.dtim.com>
- **F9 Systems, Inc.** AdvancedTCA Thermal Blade™ (bottom left) <http://www.f9-systems.com>
- **GE Fanuc Embedded Systems** AT4-AMC-1 carrier blade (bottom left) <http://www.gefanucembedded.com>

“SIZZLE FAULT”

A high resistance short between a front board's overcurrent protection and the backplane's overcurrent protection could allow high currents to be drawn through the Zone 1 Power Connector indefinitely. These currents could reach a value that is slightly less than the overcurrent protection for the entire backplane.



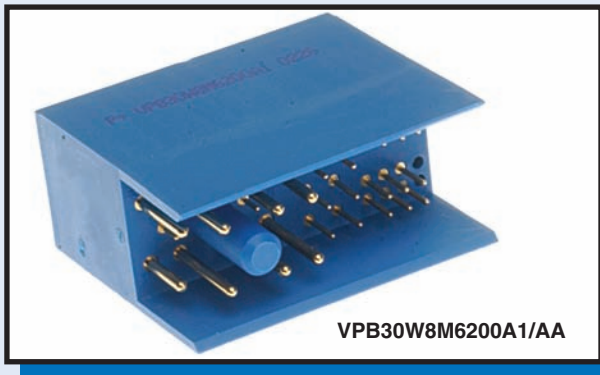
It would be advantageous for Zone 1 backplane connectors to survive specific sizzle fault conditions.

There is a proposal for a current overload test (sizzle fault test) to be added to ATCA Zone 1 connector requirements.

- Conditions: IEC 60512-3, Test 10d
- The mated set of connectors (specimens) shall be comprised of a Front Board connector with right angle (90°) press-in terminations and a backplane connector having press-in terminations
- Standard atmospheric conditions
- Ambient temperature shall be 55 degrees C
- Contact positions 28 and 33 shall be energized at 10 amperes through a circuit path sized to simulate a standard PICMG 3.0 frontboard/backplane
- Contact positions 29 and 34 shall be energized at 50 amperes through a circuit path sized to simulate a standard PICMG 3.0 frontboard/backplane
- There shall be a one hour stabilization time after test set up
- Test time shall be four hours after one hour stabilization period
- After completion of test, connectors shall be immediately uncoupled
- Requirements after test conditioning:
- Visual inspection of backplane connector shall show no defect that would impair normal operation
- After backplane connectors are allowed to cool to room ambient temperature the connectors shall be mated to fresh Front Board connectors that have right angle (90°) press-in terminations. The mated connector sets shall pass the test requirements of B.4.2.2; B.4.2.3; B.4.2.4; B.4.2.5; and B.4.3.2.

Positronic's VPB series meets the requirements of this test!

VPB FEATURES



OUTSTANDING BLIND MATING CAPABILITY

The connector is capable of mating with up to a 2 mm diametral misalignment. This blind mating feature can be used to support the plug-in board's alignment needs. This eliminates a need for separate blind mate hardware.

FOUR LEVEL SEQUENTIAL CONTACT MATING

The connector provides means for controlling power during live insertion and extraction of boards. After the blind mate feature engages during insertion, chassis and logic grounds, main input returns and precharge contacts engage. Next, main input power engages in two separate stages. Finally, last to mate enable contacts engage, which are used to signal the hot swap power manager to fully power the board.

During extraction, the first to break enable contacts signal the hot swap power manager to begin a power shut down. This serves to minimize transients, which may be caused by sudden disconnect of fully power boards.

Sequential mating contacts are separated by a minimum distance of 2.5 mm nominal which exceeds the standard practice of 1mm separation. The additional separation between contact levels ensures sequential mating even when connector component tolerance and misalignment during insertion are considered.

DUAL REDUNDANT POWER INPUT

The connector allows for the dual redundant power requirements of high availability systems. Creepage and clearance of contacts allow for voltage of 72 VDC.

If dual redundant power is not required, contacts can be depopulated for cost savings. Or, contacts can be paralleled together for higher current carrying capacity.

LOW SPEED SYSTEM MANAGEMENT CONTACTS

The connector offers up to 16 contacts which can be used to support system management circuits. This eliminates the need to use valuable high speed connectors for low speed functions.

HIGH VOLTAGE AUXILIARY CONTACTS

The connector offers up to eight (8) contacts which provide 2.5 mm creepage and clearance. These contacts can be used for any high voltage, low current circuits such as ring voltages or metallic test voltages which are common in telecom applications.

COMPATIBLE WITH HIGH SPEED DATA CONNECTORS

High speed data connectors normally hang over the front edge of the plug-in board. Because of this, the distance from the backplane to the board is fixed by the connector. This fixed distance varies between high speed connector manufacturers.

When a manufacturer offers a power connector solution along with a specified high speed connector, the power connector placement may be fixed. If a designer wishes to use one manufacturer's power solution with another manufacturer's high speed connector, the board may need to be notched so that both connectors will mate fully.

The VPB series power connector does not hang over the front edge of the board. The connector can be positioned per the requirements of the high speed connector. This eliminates the need for inconvenient and costly board notching.

CONCLUSION

VPB series connectors offer a wide variety of capabilities in a single package. This helps to reduce overall costs and minimizes the problems associated with having to use several separate components. Also, the connector provides the reliability required for high availability systems.

VPB SERIES TECHNICAL CHARACTERISTICS

MATERIALS AND FINISHES:

Insulator:	Glass-filled polyester, UL 94V-0, blue color.
Contacts:	Precision-machined copper alloy with gold flash over nickel plate. Other finishes available upon request.

ELECTRICAL CHARACTERISTICS:

Contact Current Ratings, per UL 1977:	See temperature rise curve on page 9 for details.
Size 16 Power Contacts:	30 amperes continuous, all contacts under load.
Size 22 Signal Contacts:	2 amperes nominal rating.
Current Overload Test	See page 4.
Initial Contact Resistance:	
Termination to termination:	
Size 16 Contacts:	0.0022 ohms maximum,
Size 22 Contacts:	0.0085 ohms maximum, Per IEC 512-2, Test 2b.
Insulator Resistance:	5 G ohms per IEC 512-2, Test 3a.
Voltage Proof:	
Contacts 1-16:	1,000 V r.m.s.
Contacts 17-34:	2,000 V r.m.s.
Creepage and Clearance Distance; minimum:	
Contact positions 1-16 to any other contact within this group:	0.7mm [0.028 inch]
Contact positions 17-24 to any other contact within this group:	2.5mm [0.098 inch]
Contact positions 25-34 to any other contact within this group:	1.4mm [0.055 inch]
Contact positions 13-16 to 17-20:	3.0mm [0.118 inch]
Contact positions 21-24 to 25, 26:	4.0mm [0.157 inch]
Contact positions 25, 26 to 27-29:	2.0mm [0.079 inch]

MECHANICAL CHARACTERISTICS:

Blind Mating System:	Male and female connector bodies provide "lead-in" for 2.0 mm [0.078 inch] diametral misalignment.
Polarization:	Provided by connector body design.
Fixed Contacts:	Printed board terminations, both straight and right angle (90°). Size 16 female contacts feature "Closed Entry" design. Size 22 feature rugged "Robi-D Open Entry" contact design.
Fixed Contact Retention in Connector Body:	
Size 16 Contacts:	31 N [7 lbs.]
Size 22 Contacts:	25 N [5 lbs.]
Sequential Contact Mating System:	First mate contacts 25, 26, 28 29, 30 and 31. Second mate contact 33. Third mate contact 34. Contacts 1-24 mate before 27 and 32. Last mate contacts 27 and 32.
Power to be enabled through a last mate contact within VPB Series or another connector.	
Consult Technical Sales for customer specified sequential mating.	
Printed Board Mounting:	Mounting holes provided in connector body for printed board. Self-tapping screws are available, see ordering information page.
Mechanical Operations:	250 couplings, minimum.

CLIMATIC CHARACTERISTICS:

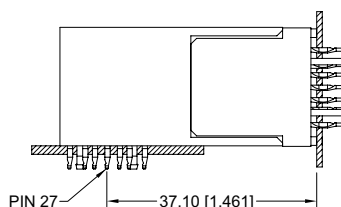
Working Temperature:	-55°C to +125°C.
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**For RoHS options
see page 10.**

MATING DIMENSIONS

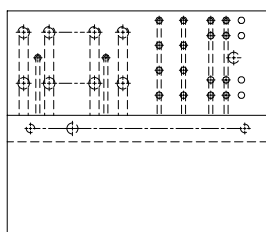
**Right Angle (90°) Board Mount Male to
Straight Board Mount Female
(FULLY MATED)**



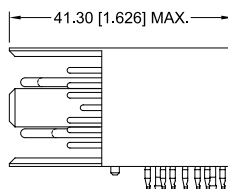
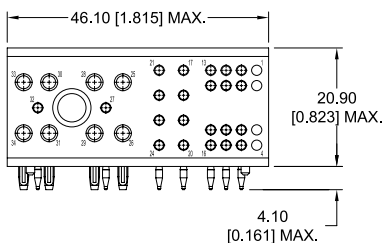
**1 mm [0.039 inch]
separation allowed**

MALE CONNECTOR WITH RIGHT ANGLE (90°) COMPLIANT PRESS-FIT TERMINATIONS CODE 62

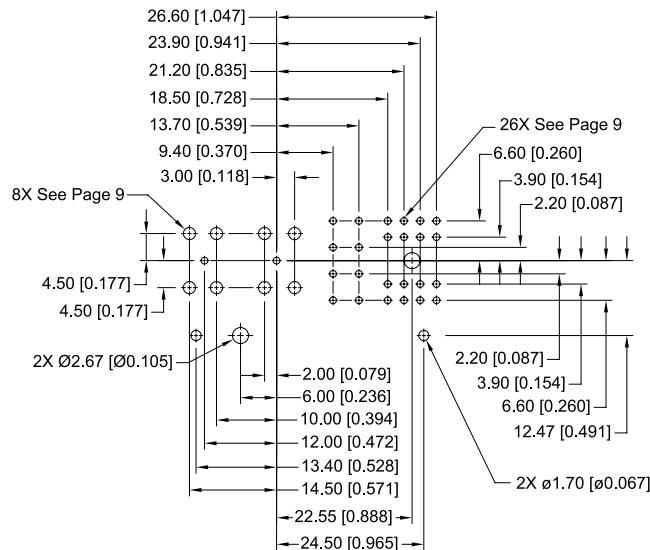
Typical Part Numbers
VPB30W8M6200*/AA



NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



VPB30W8M6200A1/AA shown for reference.
Positions 1-4 are not populated with contacts.

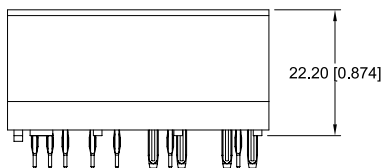
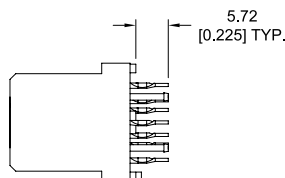
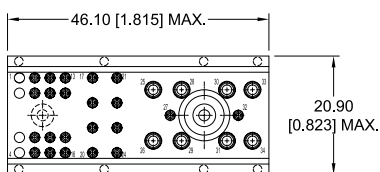


CONTACT HOLE PATTERN

NOTE: See page 9 for suggested printed board hole sizes.

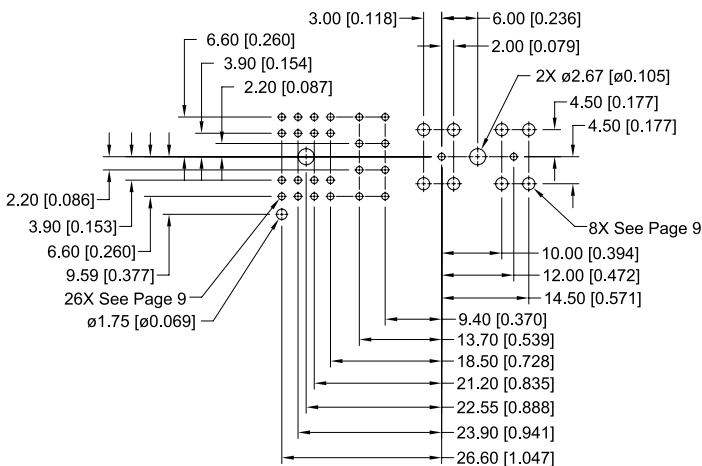
FEMALE CONNECTOR WITH STRAIGHT COMPLIANT PRESS-FIT TERMINATIONS CODE 93

Typical Part Numbers
VPB30W8F9300*/AA



NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.

VPB30W8F9300A1/AA shown for reference .
Positions 1-4 are not populated with contacts.



CONTACT HOLE PATTERN

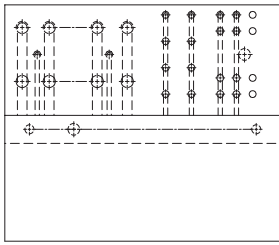
NOTE: See page 9 for suggested printed board hole sizes.

MALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER TERMINATIONS

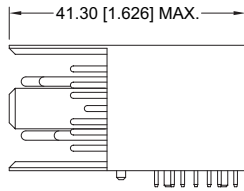
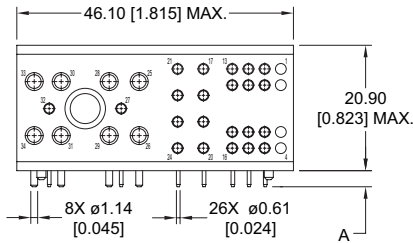
CODE 4

Typical Part Numbers

VPB30W8M400*/AA

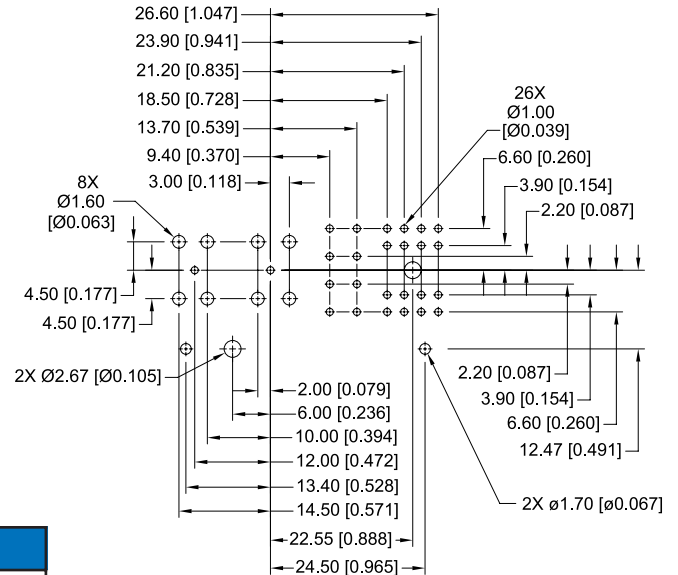


NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



VPB30W8M400A1/AA shown for reference.
Positions 1-4 are not populated with contacts.

CODE	A
4	2.68 [0.106]
42	4.09 [0.161]



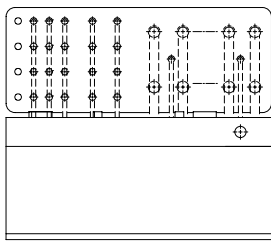
CONTACT HOLE PATTERN

FEMALE CONNECTOR WITH RIGHT ANGLE (90°) SOLDER TERMINATIONS

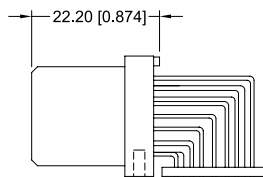
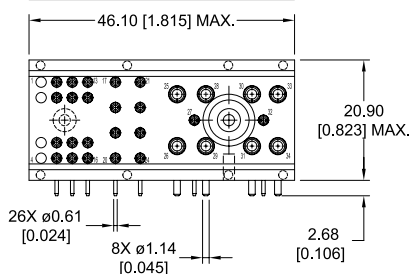
CODE 4 WITH -394.0 MOS

Typical Part Numbers

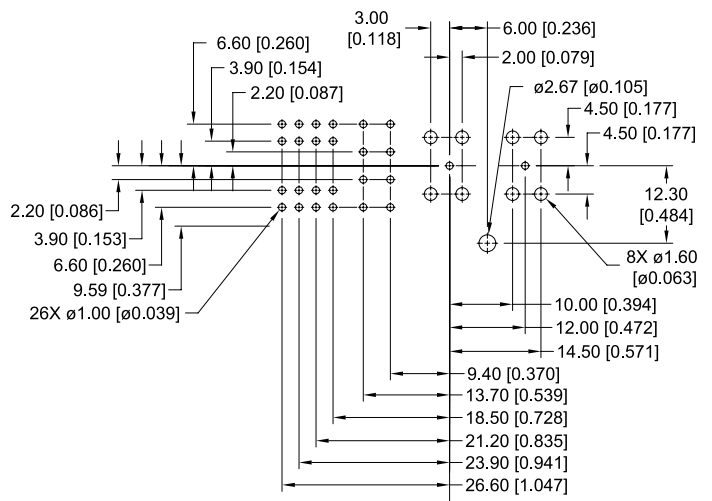
VPB30W8F400*/AA-394.0



NOTE: *Indicates contact plating options for connectors. See Step 7 of ordering information on page 10.



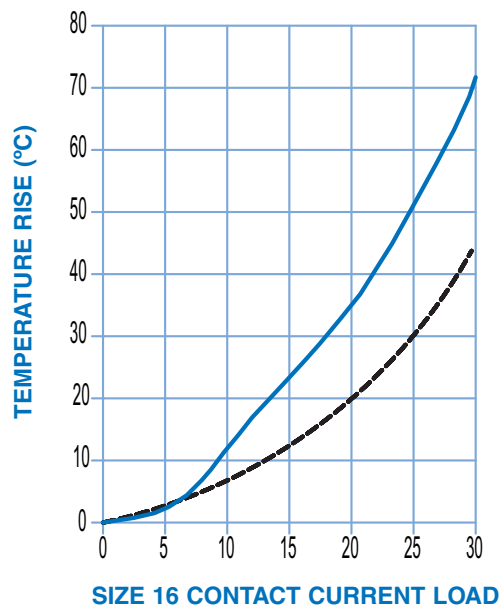
VPB30W8F400A1/AA-394.0 shown for reference.
Positions 1-4 are not populated with contacts.



CONTACT HOLE PATTERN

This connector option is offered to support extender cards.
Consult Technical Sales for higher volume requirements.

TEMPERATURE RISE CURVE



Above curve developed using
VPB30W8M6200A1 and VPB30W8F9300A1 connectors.

— **CURVE A** - ALL SIZE 16 POWER CONTACT UNDER LOAD, SIGNAL
CONTACTS 1-24 UNDER 1 AMP LOAD
- - - **CURVE B** - SIZE 16 POWER CONTACT POSITIONS 28, 33 UNDER LOAD,
SIGNAL CONTACTS 1-24 UNDER 1 AMP LOAD

EXAMPLES OF POSSIBLE CONTACT ASSIGNMENTS

CONTACT POSITION	FUNCTION
1-16	Low Speed Hardware Management
17-24	High Voltage Metallic Test and Ringing Generator Signals
25	Shelf Ground
26	Logic Ground
27/32	Enables for A and B power
28	A Return
29	B Return
30	A Early
31	B Early
33	A Voltage
34	B Voltage

SUGGESTED PRINTED BOARD HOLE SIZES FOR COMPLIANT PRESS-FIT CONNECTORS

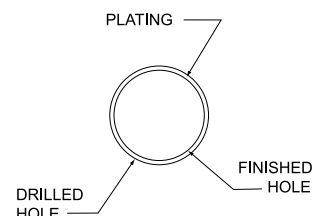
Traditionally, tin-lead has been a popular plating for PBC holes. However, many PCB hole platings must now be RoHS Compliant. Positronic is pleased to offer **PCB HOLE SIZE FOR RoHS** PCB plating as shown below.

OMEGA & BI-SPRING COMPLIANT PRESS-FIT CONTACT HOLE				
BOARD TYPE	CONTACT SIZE	RECOMMENDED DRILL HOLE SIZE	RECOMMENDED PLATING	FINISHED HOLE SIZES
TIN-LEAD SOLDER PCB	22 OMEGA	$\phi 1.150 \pm 0.025$ [$\phi 0.0453 \pm 0.0010$]	15μ [0.0006] minimum solder over 25μ [0.0010] min. copper	$\phi 1.000 \pm 0.090 - 0.060$ [$\phi 0.0394 \pm 0.0035 - 0.0024$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
RoHS PCB PLATING OPTIONS				
COPPER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION TIN PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.85±0.15μ [0.000033±0.000006] immersion tin over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
IMMERSION SILVER PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.34±0.17μ [0.000013±0.000007] immersion silver over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]
ELECTROLESS NICKEL/ IMMERSION GOLD PCB	22 OMEGA	$\phi 1.19 \pm 0.025$ [$\phi 0.047 \pm 0.001$]	0.05μ [0.000002] min. immersion gold over 4.5±1.5μ [0.000177±0.000059] electroless nickel per IPC-4552 over 25μ [0.0010] min. copper	$\phi 1.09 \pm 0.05$ [$\phi 0.043 \pm 0.002$]
	16 BI-SPRING	$\phi 1.750 \pm 0.025$ [$\phi 0.069 \pm 0.001$]		$\phi 1.600 \pm 0.090 - 0.060$ [$\phi 0.0630 \pm 0.0035 - 0.0024$]

“Omega” Termination



“Bi-Spring” Termination



COMPLIANT PRESS-FIT CONTACT HOLE

NOTE: For PCB plating compositions not shown, consult Technical Sales.

ORDERING INFORMATION – CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting an Option From Steps 1 Through 8

STEP	1	2	3	4	5	6	7	8	9
EXAMPLE	VPB	30W8	F	93	0	0	A1	/AA	-394.0
<div> <div> STEP 1 - BASIC SERIES VPB - VP Series </div> <div> STEP 2 - CONNECTOR VARIANTS *30W8 - Contact positions 1-4 are not populated. Standard variant for AdvancedTCA® backplanes. Standard option for frontboards. *22W8 - Contact positions 1-4 and 17-24 are not populated. Standard cost saving option for AdvancedTCA® frontboards. </div> <div> STEP 3 - CONNECTOR GENDER M - Male F - Female </div> <div> STEP 4 - CONTACT TERMINATION TYPE 4 - Right Angle (90°) Board Mount, Solder, termination length 2.68 [0.106] (30W8 female requires MOS 394.0, contact Technical Sales for 22W8 female MOS part number) 42- Right Angle (90°) Board Mount, Solder, termination length 4.09 [0.161]. 62 - Right Angle (90°) Board Mount, Press-fit. Male only 93 - Straight Board Mount, Press-fit. Female only </div> <div> STEP 5 0 - None </div> </div> <div> <div> STEP 9 - SPECIAL OPTIONS 394.0- Allows for female contact right angle (90°) solder mount. CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS </div> <div> STEP 8 - ENVIRONMENTAL COMPLIANCE OPTIONS /AA - Compliant per EU Directive 2002/95/EC (RoHS) Note: This step should be included to create a standard part number. Example: VPB30W8F9300A1/AA </div> <div> STEP 7 - CONTACT PLATING (choose plating based on end use requirements) A1 - Gold flash over nickel on mating end and termination end. A2 - Gold flash over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coat on termination end. Not available with code 62 or 93 in step 4. C1 - 0.76µ [0.000030 inch] gold over nickel on mating end and termination end. C2 - 0.76µ [0.000030 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coated termination end. Not available with code 62 or 93 in step 4. D1 - 1.27µ [0.000050 inch] gold over nickel on mating end and termination end. D2 - 1.27µ [0.000050 inch] gold over nickel on mating end and 5.00µ [0.00020 inch] tin-lead solder coated termination end. Not available with code 62 or 93 in step 4. </div> </div> <div> STEP 6 0 - None </div>									



*VPB series can be supplied with contacts populated in all 34 positions. Use part number VPB34W8*****.

- Female compliant press-fit connectors **require a press-fit tool**, part number 9513-308-1-41, for installation.
- The use of a support tool when installing **press-fit** connectors is recommended. For female connectors use 9513-400-6-41, for male connectors use 9513-400-8-41.

Unless otherwise specified, dimensional tolerances are:

- 1) ± 0.13 mm [0.005 inches] for all diameters.
- 2) ± 0.38 mm [0.015 inches] for all other dimensions.

Let us work with you to develop variants of the VP Series to meet your specific requirements.

MOUNTING SCREWS			
STEEL SCREW PART NUMBER	STAINLESS STEEL SCREW PART NUMBER	THREAD LENGTH	Install Screw to a Depth of: 3.50 [0.138] Minimum 5.00 [0.197] Maximum Contact technical sales for RoHS compliant mounting screw information
4546-7-1-16	4546-7-6-4	6.35+0.00-0.76 [0.250+0.000-0.030]	
4546-7-2-16	4546-7-7-4	7.93+0.00-0.76 [0.312+0.000-0.030]	
4546-7-3-16	4546-7-8-4	9.53+0.00-0.76 [0.375+0.000-0.030]	
4546-7-4-16	4546-7-9-4	11.11+0.00-0.76 [0.438+0.000-0.030]	

Telecordia GR1217 shows a preference that press-fit connectors use auxiliary mounting hardware. Also, the AdvancedTCA® Zone 1 connector serves as the lower alignment feature for front boards. Therefore, the use of mounting hardware is recommended.

However, VPB connectors have been tested to PICMG 3.0 B.5.1.3 requirements, which may guide connector users to omit use of screws. Contact Positronic for test details.

Other Power Connector Products

To view all products visit

www.connectpositronic.com

Positronic Industries has a wide variety of power connector products. Let us provide solutions for Power Entry Modules (PEM) and other power distribution needs.



Power Connection Systems

Available with 3 to 30 contacts and utilizes an integral locking system. Offers a wide variety of termination styles and accessories for board to board, cable to board, and panel to cable applications.



Infinity/Mini-Infinity

For low, medium and high power applications requiring outstanding blind mating capability. Offers mixed contact density, sequential mate contacts, and a wide variety of termination styles.



Compact Power Connector

The power interface for platforms that utilize IEEE1101.10 form factors including CompactPCI®. Offers a wide variety of sizes and contact variants. Provides for input, output, and system management in a single connector as well as three-level sequential mating.



Goldfish

For low to mid range power applications that require excellent blind mating. Additional options include float mounts, selective loading and sequential mating.



DragonFly

High density connectors having power and/or signal contacts. Multiple package sizes with integral locking system.



Sumo

Drop-in replacement to the popular top drawer connector



DIMENSIONS ARE IN MILLIMETERS [INCHES].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.

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