

# AMPMODU Interconnection System

RoHS  
Ready 

 **Tyco Electronics**  
Our commitment. Your advantage.

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PC/104 and PC/104-Plus Connectors  
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.050 x .050 [1.27 x 1.27] Centerline  
**2**

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.050 x .100 [1.27 x 2.54] Centerline  
**3**

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AMPMODU 2mm Connectors  
**4**

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.100 x .100 [2.54 x 2.54] Centerline  
**5**

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.125 x .125 [3.18 x 3.18] Centerline  
**6**

AMP, ACTION PIN, AMP-LATCH, AMP-O-ELECTRIC, AMP-O-MATIC, AMPLIMITE, AMPMODU, AMPOMATOR, CERTI-CRIMP, CHAMPOMATOR, PRO-CRIMPER, R-CAM, TE LOGO and TYCO ELECTRONICS are trademarks of Tyco Electronics Corporation.

.156 [3.96] Centerline  
**7**

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<b>1</b>	PC/104 and PC/104-Plus Connectors
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<b>3</b>	.050 x .100 [1.27 x 2.54] Centerline
<b>4</b>	AMPMODU 2mm Connectors
<b>5</b>	.100 x .100 [2.54 x 2.54] Centerline
<b>6</b>	.125 x .125 [3.18 x 3.18] Centerline
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.050 x .050 [1.27 x 1.27] Centerline  
**2**

.050 x .100 [1.27 x 2.54] Centerline  
**3**

AMPMODU 2mm Connectors  
**4**

.100 x .100 [2.54 x 2.54] Centerline  
**5**

.125 x .125 [3.18 x 3.18] Centerline  
**6**

.156 [3.96] Centerline  
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At Tyco Electronics, we're ready to support your RoHS requirements. We've assessed more than 1.5 million end items/components for RoHS compliance, and issued new part numbers where any change was required to eliminate the restricted materials. Part numbers in this catalog are identified as:

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NOTE: For purposes of this Catalog, included within the definition of RoHS Compliant are products that are clearly "Out of Scope" of the RoHS Directive such as hand tools and other non-electrical accessories.

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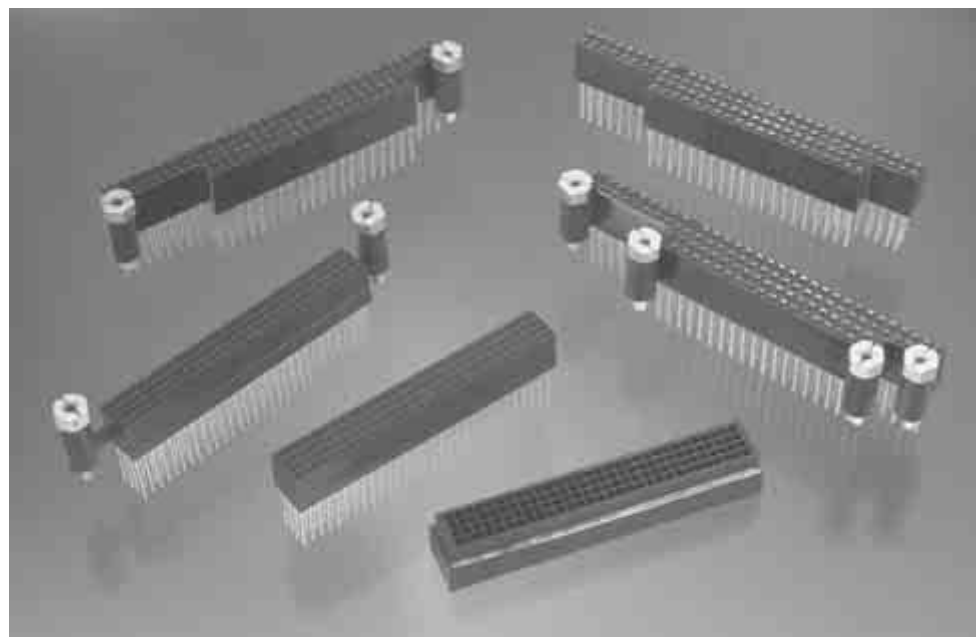
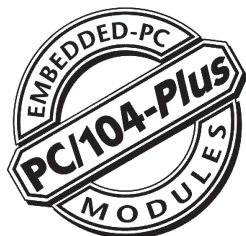
- Cross-Reference from Non-compliant to Compliant Products
- Ability to browse RoHS Compliant Products in our on-line catalog
- Downloadable Technical Data Customer Information Presentation
- More detailed information regarding the definitions used above
- So whatever your questions when it comes to RoHS, we have the answers at [www.tycoelectronics.com/leadfree](http://www.tycoelectronics.com/leadfree)



## PC/104 and PC/104-Plus Connectors

### Product Facts

- Press fit design — eliminates hand soldering
- Unitized PC/104 connector assembly — eliminates two piece (64 pin & 40 pin) configuration
- Integral board spacers with captive hardware — eases & improves assembly efficiency while minimizing stocked hardware
- “Flat-rock” insertable — no need for complex insertion tooling
- Recognized by Underwriters' Laboratories to US and Canadian standards  file No. E28476
- Fully compliant with PC104 & PC104-Plus standards
- Solutions available for lead free processes (ie. ENIG and silver immersion plated PCB's)



The PC/104 and PC/104-Plus connectors are industry standard product offerings which comply with the interconnection requirements defined by the PC/104 organization (<http://www.pc104.org>)

Both products are designed specifically for “flat-rock” press-fit installation for ease of application. Solder version is also available.

Optional integral standoffs minimize the customer's system assembly time.

The Tyco Electronics offering of the standard PC/104 product is a unitized connector rather than the two piece, 40 and 64 position connectors currently on the market. Customer needs to stock and apply only one part number rather than two.

### Performance Specifications

#### Electrical Characteristics

Meets requirements of PC/104 and PC/104-Plus standards

**Nominal Resistance** — 10 milliohms maximum,  $\Delta R$

**Insulation Resistance** — 1000 megohms minimum

**Dielectric Withstanding Voltage** — 500 VAC for 1 min. at sea level

#### Mechanical Characteristics

Meets requirements of PC/104 and PC/104-Plus standards

**Current** — Signal application only

**Temperature** — -55° to 105°C

#### Material and Finish

**Housing** — Black Thermoplastic, UL 94V-0

**Contact** — Phosphor Bronze, Full Gold all over Nickel (stackthrough), Gold on mating end, Tin or Tin-lead on PCB tail all over Nickel (non-stackthrough)

### Need more information?

Call Technical Support 1-800-522-6752:

Technical Support is staffed with specialists well versed in all Tyco Electronics products. The Center can provide you with:

- Technical Support
- Catalogs
- Technical Documents
- Tyco Electronics Authorized Distributor Locations

### Technical Documents

#### Product Specifications

108-1956

#### Application Specifications

114-13021

Connector	Centerline	Position
PC/104	.100 2.54	104*
PC/104-Plus	.079 2.0	120**

\*Two circuits plugged per PC/104 specification. Other options available.

\*\*One circuit plugged per PC/104-Plus specification. Other options available.



**PC/104, Press-Fit**

**Material and Finish**

**Housing** — Glass filled thermoplastic, Black, 94V-0 rated

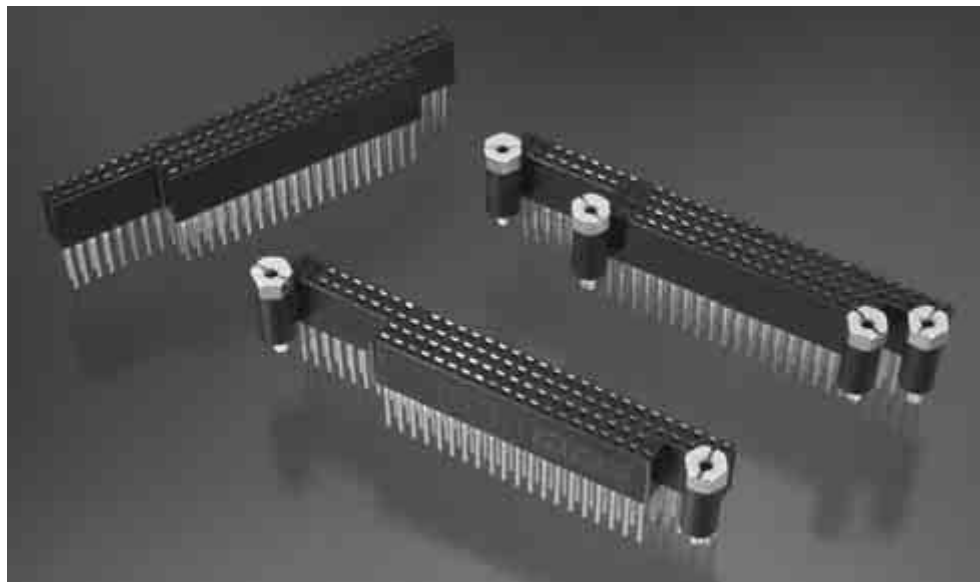
**Contacts**

**Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000005 [0.000130] min. Gold on remainder, all over .000050 [0.00127] Nickel

or  
Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100-.000200 [0.000254-.00508] matte tin on compliant section, .000005 [0.000130] min. Gold on remainder of post, all over .000050 [0.00127] Nickel

**Non-Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100 [0.00254] matte tin or tin-lead on remainder, all over .000050 [0.00127] Nickel

**Screwlocks** — Steel, Clear Chromate over Zinc



**Stackthrough, No Standoffs**

Gold plated contacts\*

**Part No. 1375795-1** (keyed), **Part No. 1375795-2** (unkeyed)

Gold plated contacts with Tin plated compliant pin section\*\*

**Part No. 1375795-3** (keyed), **Part No. 1375795-4** (unkeyed)

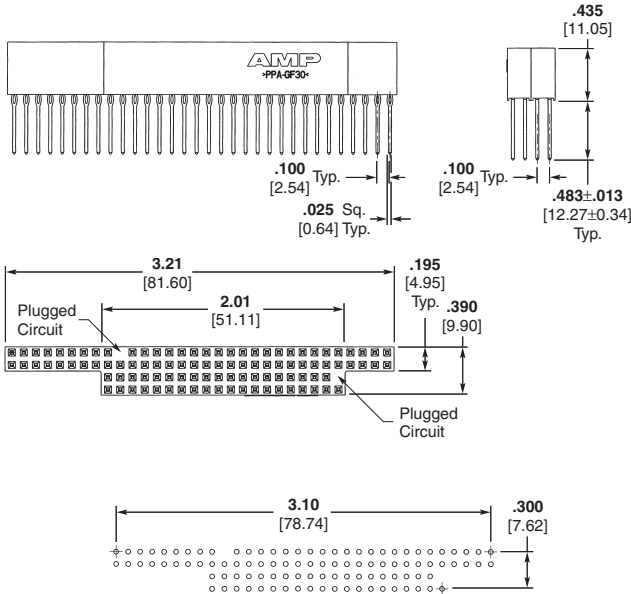
**Non-Stackthrough, No Standoffs**

Tin-lead plated tails\*

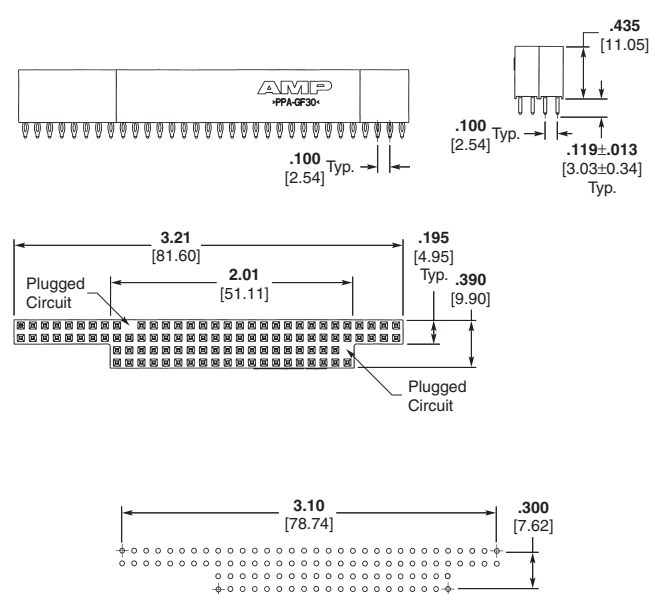
**Part No. 1375796-1** (keyed), **Part No. 1375796-2** (unkeyed)

Matte tin plated tails\*\*

**Part No. 1375796-3** (keyed), **Part No. 1375796-4** (unkeyed)



Keyed



Unkeyed

**Recommended PC Board Layout**  
See Customer Drawing for  
Hole Geometry and Recommended Plating.

**Note:** All part numbers are RoHS compliant.

\* For RoHS exempt Tin-lead processes (including ENIG Plated PCB's)

\*\* for Silver Immersion processes or where a total lead free solution is desired

**PC/104, Press-Fit (Continued)**

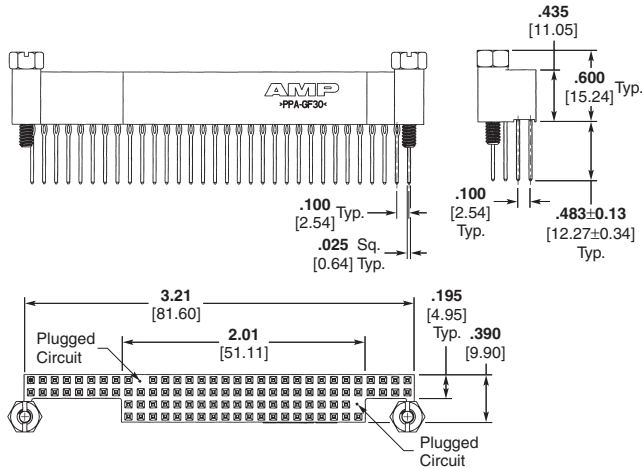
**Stackthrough, 2 Standoffs**

Gold plated contacts\*

Part No. 1375793-1 (keyed), Part No. 1375793-2 (unkeyed)

Gold plated contacts with Tin plated compliant pin section\*\*

Part No. 1375793-3 (keyed), Part No. 1375793-4 (unkeyed)



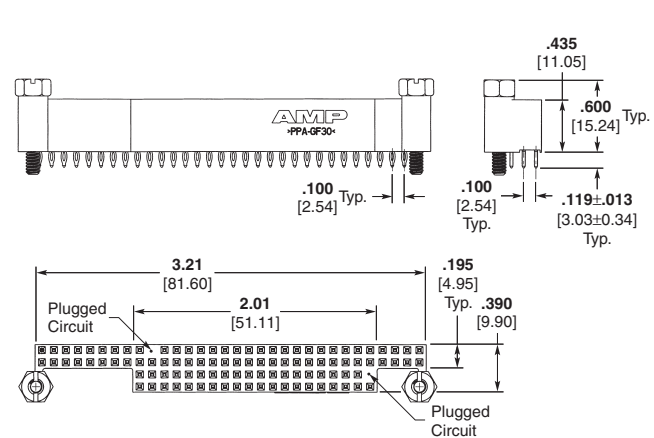
**Non-Stackthrough, 2 Standoffs**

Tin-lead plated tails\*

Part No. 1375794-1 (keyed), Part No. 1375794-2 (unkeyed)

Matte tin plated tails\*\*

Part No. 1375794-3 (keyed), Part No. 1375794-4 (unkeyed)



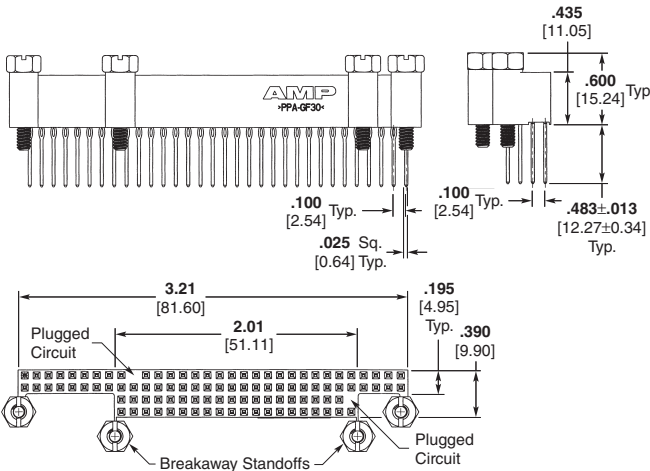
**Stackthrough, 4 Standoffs**

Gold plated contacts\*

Part No. 1375791-1 (keyed), Part No. 1375791-2 (unkeyed)

Gold plated contacts with Tin plated compliant pin section\*\*

Part No. 1375791-3 (keyed), Part No. 1375791-4 (unkeyed)



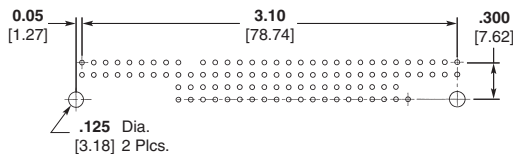
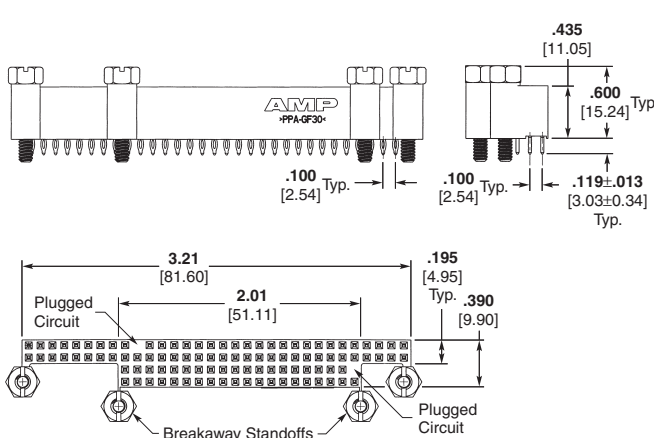
**Non-Stackthrough, 4 Standoffs**

Tin-lead plated tails\*

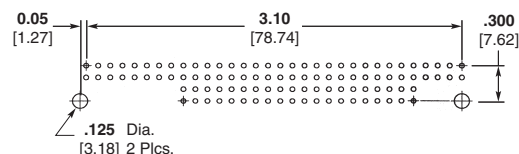
Part No. 1375792-1 (keyed), Part No. 1375792-2 (unkeyed)

Matte tin plated tails\*\*

Part No. 1375792-3 (keyed), Part No. 1375792-4 (unkeyed)



Keyed



Unkeyed

**Recommended PC Board Layout**  
See Customer Drawing for  
Hole Geometry and Recommended Plating.

**Note:** All part numbers are RoHS compliant.

\* For RoHS exempt Tin-lead processes (including ENIG Plated PCB's)

\*\* for Silver Immersion processes or where a total lead free solution is desired

**PC/104-Plus, Press-Fit**

**Material and Finish**

**Housing** — Glass filled thermoplastic, Black, 94V-0 rated

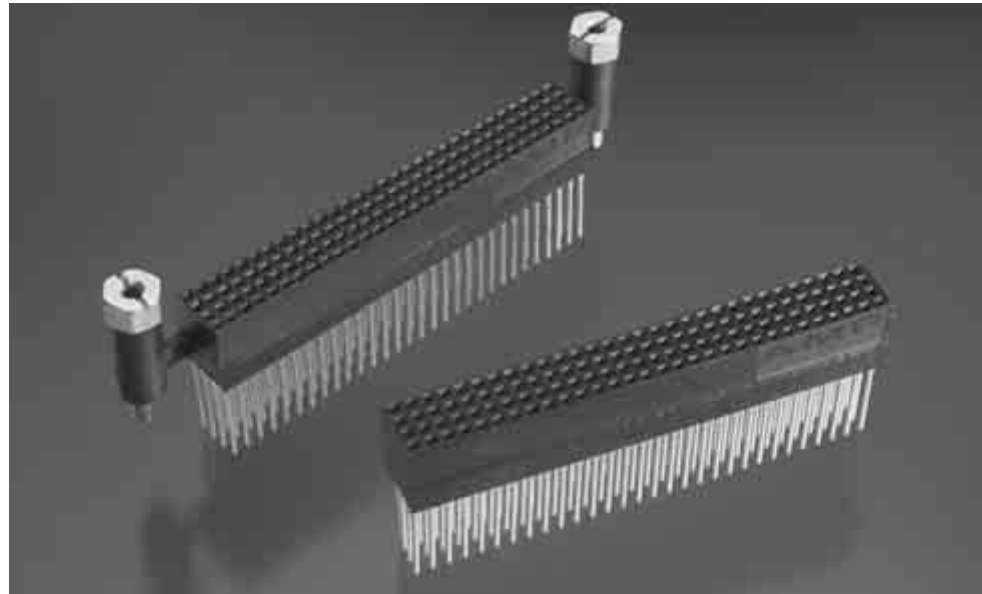
**Contacts**

**Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000005 [0.000130] min. Gold on remainder, all over .000050 [0.00127] Nickel

or  
Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100-.000200 [0.000254-.000508] matte tin on compliant section, .000005 [0.000130] min. Gold on remainder of post, all over .000050 [0.00127] Nickel

**Non-Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100 [0.00254] matte tin or tin-lead on remainder, all over .000050 [0.00127] Nickel

**Screwlocks** — Steel, Clear Chromate over Zinc



**Stackthrough, No Standoffs**

Gold plated contacts\*

- Part No. 1375799-1** (unkeyed)
- Part No. 1375799-2** (keyed-A1) per PC/104-Plus specification
- Part No. 1375799-3** (keyed-D30) per PC/104-Plus specification

Gold plated contacts with Tin plated compliant pin section\*\*

- Part No. 1375799-4** (unkeyed)
- Part No. 1375799-5** (keyed-A1) per PC/104-Plus specification
- Part No. 1375799-6** (keyed-D30) per PC/104-Plus specification

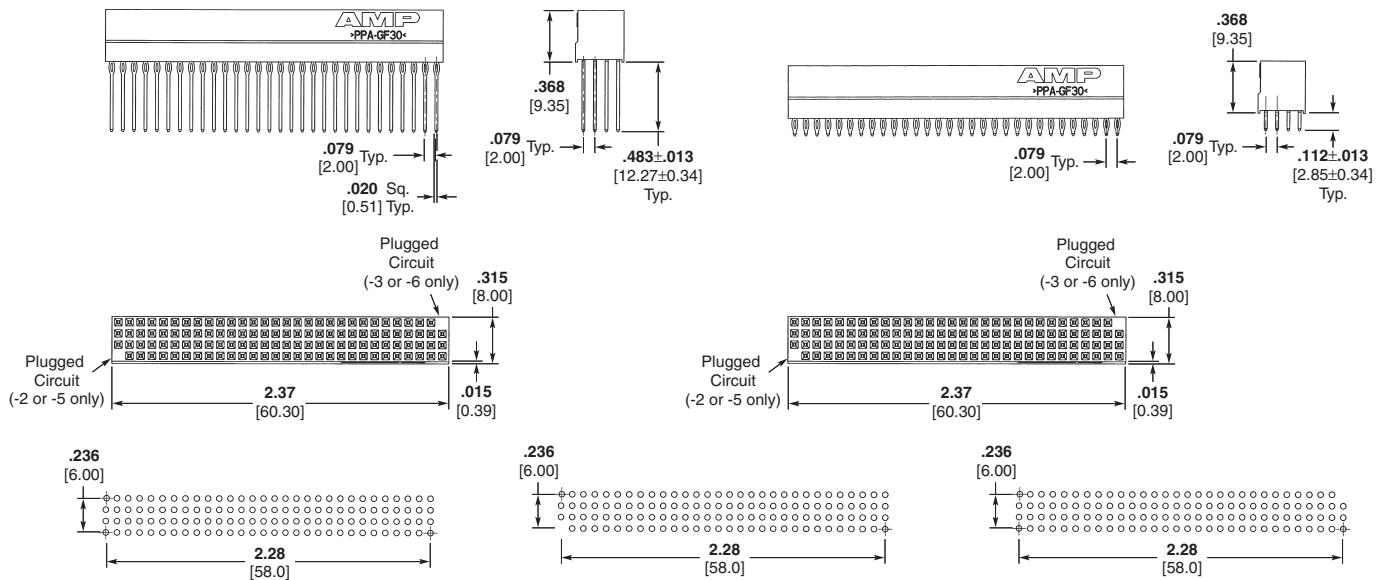
**Non-Stackthrough, No Standoffs**

Tin-lead plated tails\*

- Part No. 1375800-1** (unkeyed)
- Part No. 1375800-2** (keyed-A1) per PC/104-Plus specification
- Part No. 1375800-3** (keyed-D30) per PC/104-Plus specification

Matte tin plated tails\*\*

- Part No. 1375800-4** (unkeyed)
- Part No. 1375800-5** (keyed-A1) per PC/104-Plus specification
- Part No. 1375800-6** (keyed-D30) per PC/104-Plus specification



**Recommended PC Board Layout for 1375799-1, 1375799-4, 1375800-1, 1375800-4**

**Recommended PC Board Layout for 1375799-2, 1375799-5, 1375800-2, 1375800-5**

**Recommended PC Board Layout for 1375799-3, 1375799-6, 1375800-3, 1375800-6**

**See Customer Drawing for Hole Geometry and Recommended Plating. (Including ENIG plated PCB's)**

**Note:** All part numbers are RoHS compliant.

\* For RoHS exempt Tin-lead processes (including ENIG Plated PCB's)

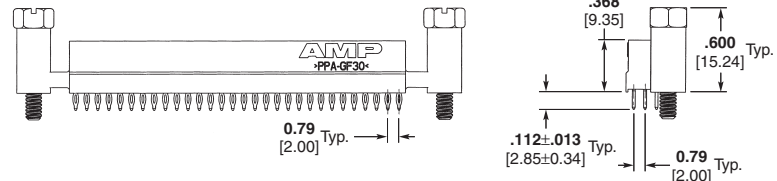
\*\* for Silver Immersion processes or where a total lead free solution is desired



**PC/104-Plus, Press-Fit (Continued)**

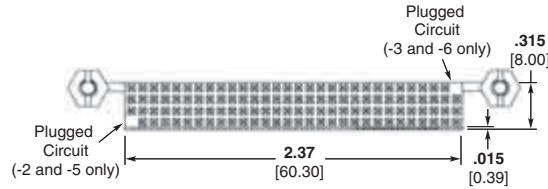
**Non-Stackthrough, 2 Standoffs**

- Tin-lead plated tails\*
- Part No. 1375798-1 (unkeyed)
- Part No. 1375798-2 (keyed-A1)  
per PC/104-Plus specification
- Part No. 1375798-3 (keyed-D30)  
per PC/104-Plus specification



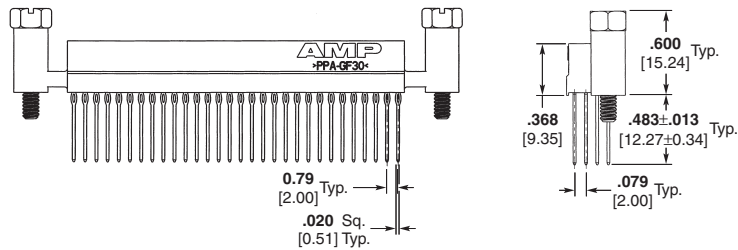
Matte tin plated tails\*\*

- Part No. 1375798-4 (unkeyed),
- Part No. 1375798-5 (keyed-A1)  
per PC/104-Plus specification
- Part No. 1375798-6 (keyed-D30)  
per PC/104-Plus specification



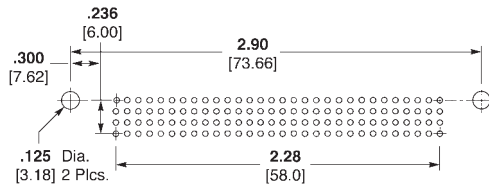
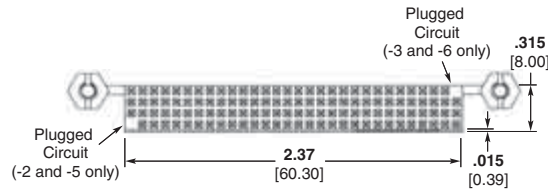
**Stackthrough, 2 Standoffs**

- Gold plated contacts\*
- Part No. 1375797-1 (unkeyed)
- Part No. 1375797-2 (keyed-A1)  
per PC/104-Plus specification
- Part No. 1375797-3 (keyed-D30)  
per PC/104-Plus specification

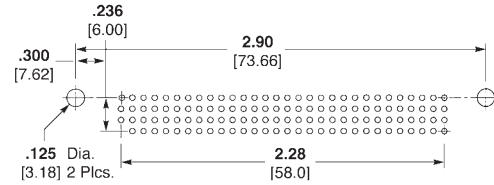


Gold plated contacts with Tin plated compliant pin section\*\*

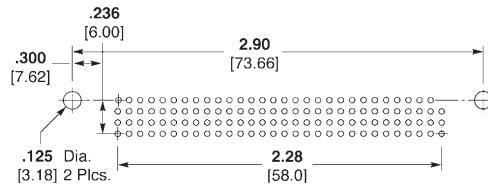
- Part No. 1375797-4 (unkeyed)
- Part No. 1375797-5 (keyed-A1)  
per PC/104-Plus specification
- Part No. 1375797-6 (keyed-D30)  
per PC/104-Plus specification



**Recommended PC Board Layout**  
for 1375797-1, 1375797-4,  
1375798-1, 1375798-4



**Recommended PC Board Layout**  
for 1375797-2, 1375797-5,  
1375798-2, 1375798-5



**Recommended PC Board Layout**  
for 1375797-3, 1375797-6,  
1375798-3, 1375798-6

See Customer Drawing for  
Hole Geometry and Recommended Plating.

**Note:** All part numbers are RoHS compliant.

\* For RoHS exempt Tin-lead processes (including ENIG Plated PCB's)

\*\* for Silver Immersion processes or where a total lead free solution is desired

**PC/104, Solder**

**Material and Finish**

**Housing** — Glass filled thermoplastic, Black, 94V-0 rated

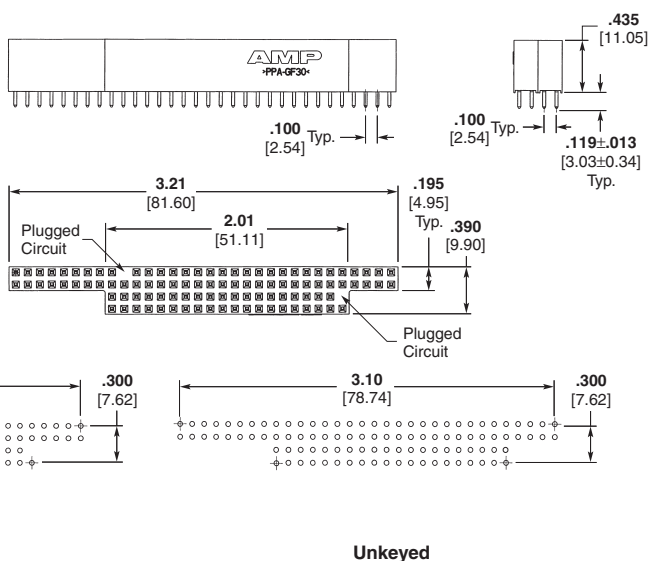
**Contacts**

**Non-Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100 [0.00254] matte tin on remainder, all over .000050 [0.00127] Nickel

**Screwlocks** — Steel, Clear Chromate over Zinc

**Non-Stackthrough, No Standoffs**

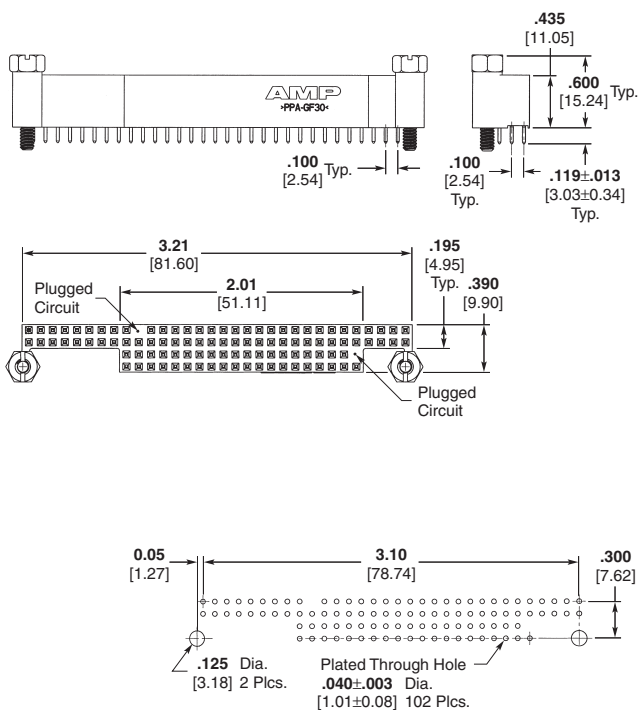
**Part No. 1375963-3** (keyed)  
**Part No. 1375963-4** (unkeyed)



Recommended PC Board Layout

**Non-Stackthrough, 2 Standoffs**

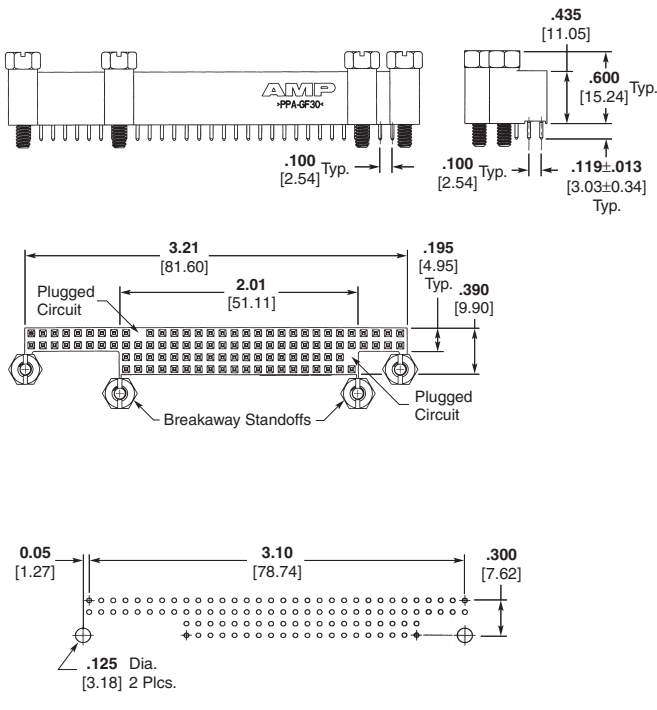
**Part No. 1375961-3** (keyed)  
**Part No. 1375961-4** (unkeyed)



Recommended PC Board Layout

**Non-Stackthrough, 4 Standoffs**

**Part No. 1375959-3** (keyed)  
**Part No. 1375959-4** (unkeyed)



**Note:** All part numbers are RoHS compliant.

## PC/104-Plus, Solder

### Material and Finish

**Housing** — Glass filled thermoplastic, Black, 94V-0 rated

### Contacts

**Non-Stackthrough** — Phosphor Bronze; plated .000015 [0.00038] min. Gold on mating receptacle end, .000100 [0.00254] matte tin on remainder, all over .000050 [0.00127] Nickel

**Screwlocks** — Steel, Clear Chromate over Zinc

### Non-Stackthrough, No Standoffs

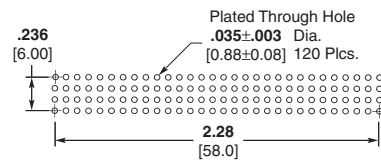
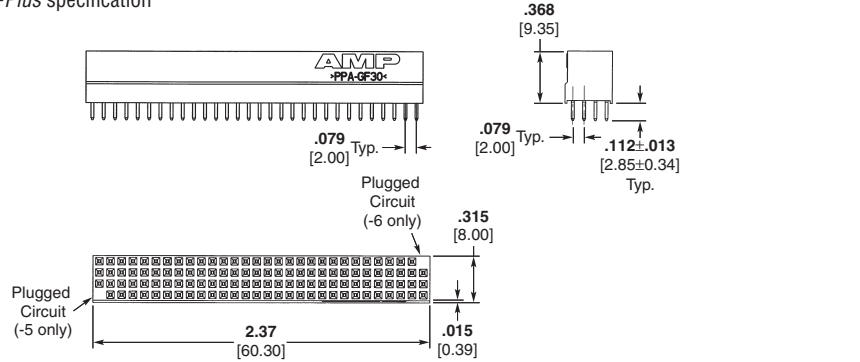
**Part No. 1375967-4** (unkeyed)

**Part No. 1375967-5** (keyed-A1)

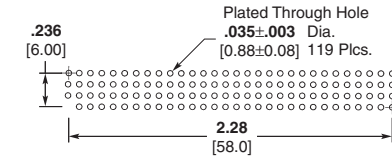
per PC/104-Plus specification

**Part No. 1375967-6** (keyed-D30)

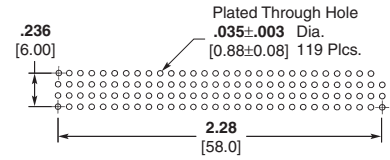
per PC/104-Plus specification



Recommended PC Board Layout for 1375967-4



Recommended PC Board Layout for 1375967-5



Recommended PC Board Layout for 1375967-6

### Non-Stackthrough, 2 Standoffs

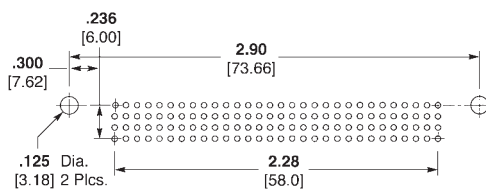
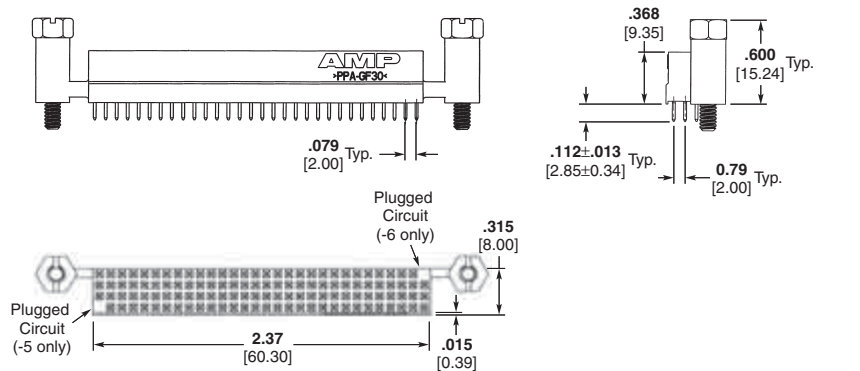
**Part No. 1375965-4** (unkeyed)

**Part No. 1375965-5** (keyed-A1)

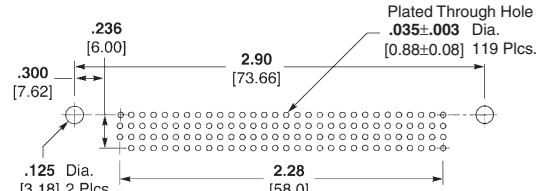
per PC/104-Plus specification

**Part No. 1375965-6** (keyed-D30)

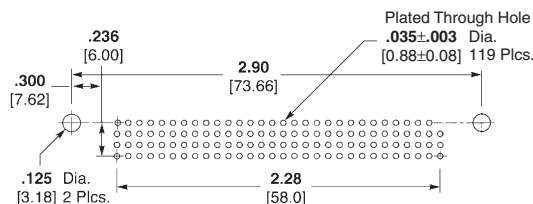
per PC/104-Plus specification



Recommended PC Board Layout for 1375965-4



Recommended PC Board Layout for 1375965-5



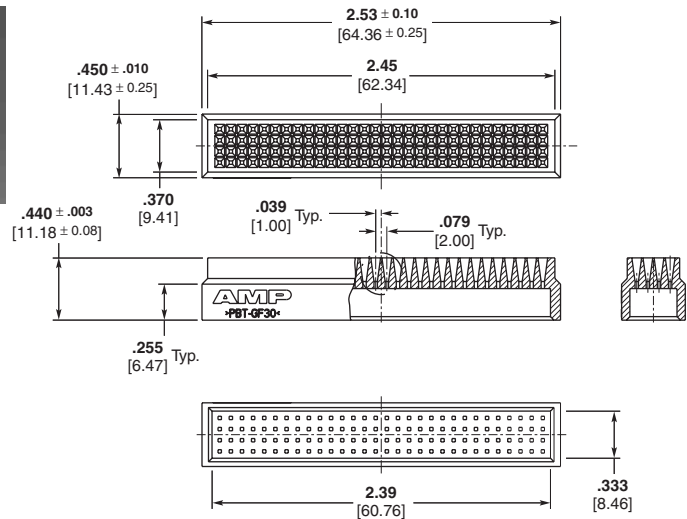
Recommended PC Board Layout for 1375965-6

**Note:** All part numbers are RoHS compliant.

**Accessories**

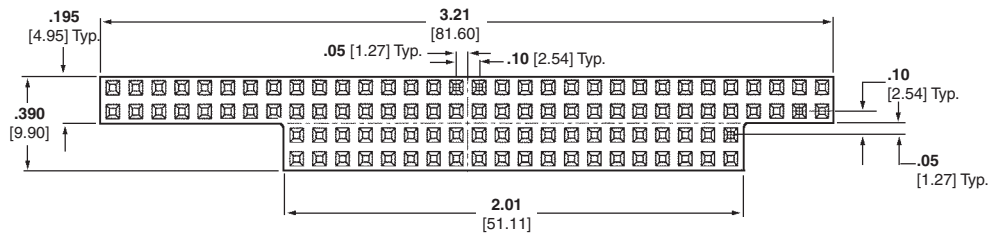
**Shroud, PC/104-Plus**  
Part No. 1375801-1

**Material** — PBT, Black



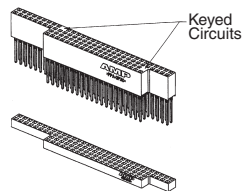
**Organizer, PC/104**  
Part Number 1445251-1

**Material** — Polyester, PBT, Black

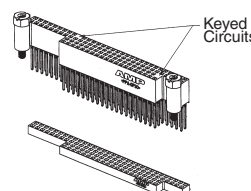


**Kit Packaging Part Numbers**

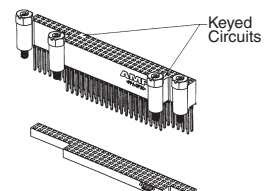
Part Number	Component Part Number		Style
	Connector Assembly	Organizer	
1445441-3	1375795-3	1445251-1	Keyed
1445441-4	1375795-4	1445251-1	Unkeyed
1445440-3	1375793-3	1445251-1	Keyed
1445440-4	1375793-4	1445251-1	Unkeyed
1445439-3	1375791-3	1445251-1	Keyed
1445439-4	1375791-4	1445251-1	Unkeyed



Part No. 1445441-3



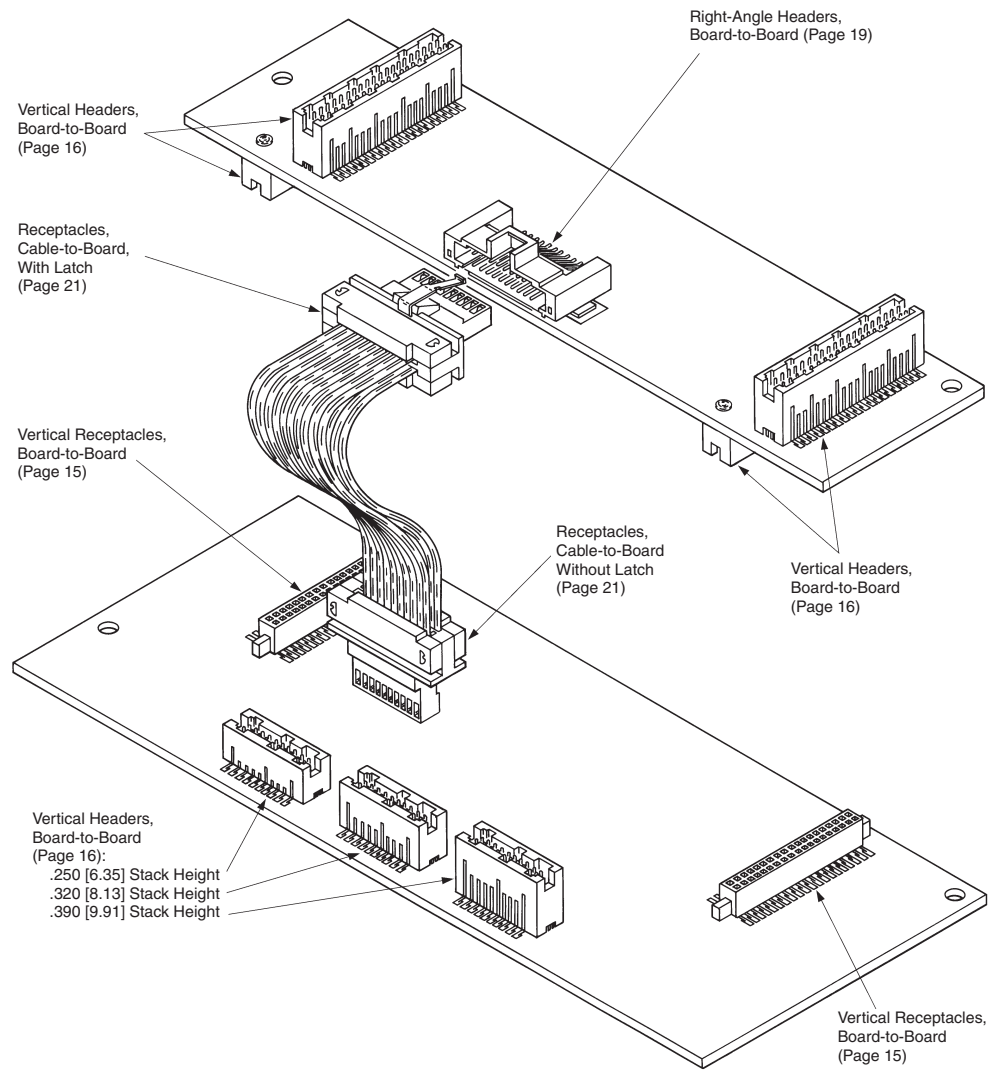
Part No. 1445440-3



Part No. 1445439-3

**Note:** All part numbers are RoHS compliant.

**AMPMODU 50/50 Grid Connector System**





**Produced under a Quality Management System certified to ISO 9001**

A copy of the certificate is available upon request.

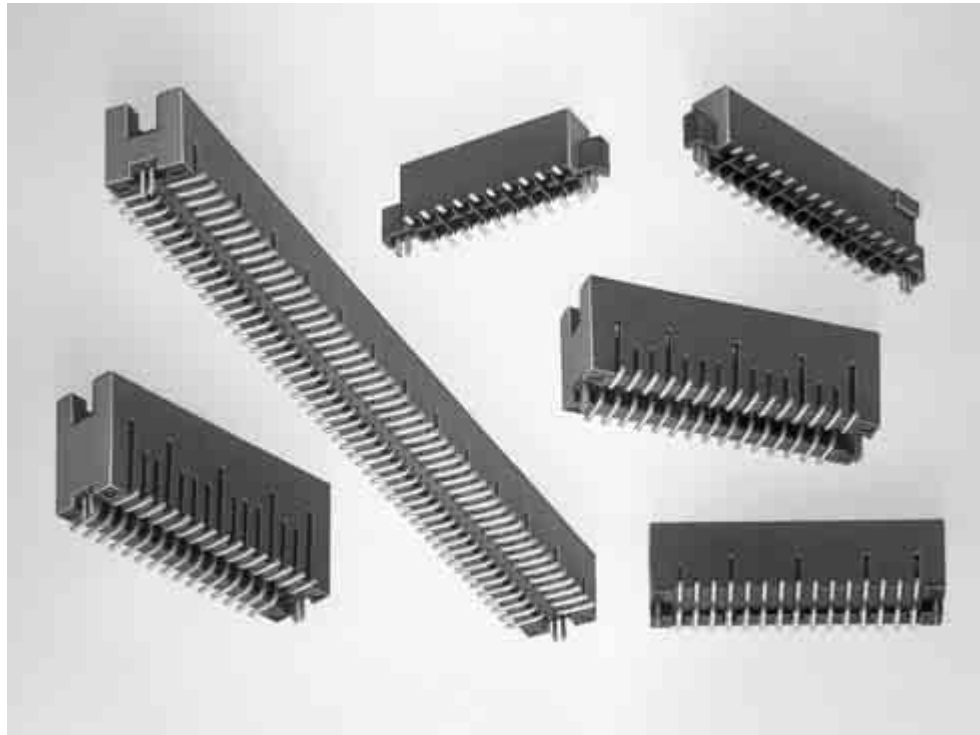




**Product Facts**

- Surface-mount products for parallel board-to-board applications, as well as right-angle board-to-board and cable-to-board applications
- High density .050 x .050 [1.27x1.27] centerline grid
- Three board-to-board stack heights: .250 [6.35], .320 [8.13] and .390 [9.91]
- Non-protrusive metallic holddowns
- Reliable dual beam receptacle contacts for redundant contact
- Duplex plated receptacle and post contacts; gold plated on mating areas, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Receptacle and header allow for drainage of processing fluids
- Tape and reel packaging available. Contact Tyco Electronics for details
- Polarized header and receptacle assemblies
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association File No. LR7189 

**Board-to-Board Vertical Receptacles and Headers**



AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed for parallel board-to-board stacking in high density applications.

Right-angle board-to-board and cable-to-board applications are also possible, since the vertical receptacles also mate with non-latching right-angle headers (page 19) and the vertical headers also mate with non-latching cable connectors.

Available are double row, vertical shrouded headers and receptacles in sizes ranging from 10 through 100 positions (in 10 position increments).

Parallel board-to-board stack heights of .250 [6.35], .320 [8.13] and .390 [9.91] are achievable by selection of the appropriate header. The receptacle is the same for all three stack height headers.

Non-protrusive metallic holddowns are designed for use in .062 [1.57] or thicker

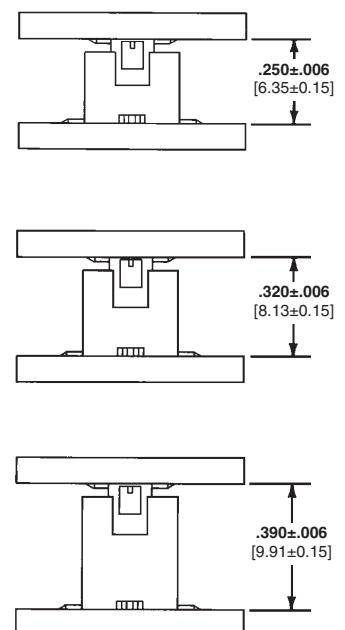
PC boards and allow surface mounting to both sides of the board. In addition to providing retention during processing, the holddowns are soldered during reflow and therefore provide long-term strain relief for the solder joints.

AMPMODU 50/50 Grid Vertical Headers and Receptacles are designed to be compatible with standard surface-mount processes; IR (infrared) and VPR (vapor phase reflow). The surface-mount connectors have been designed so that dimensioning, tolerances, referenced datums, holddown characteristics

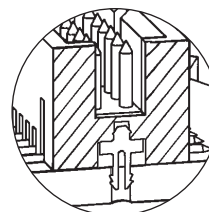
and packaging methods result in a system that is compatible with robotic assembly.

The headers and receptacles feature polarization to prevent misalignment.

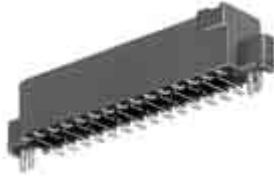
**Three Board Stack Heights**



**Non-Protrusive Metallic Holddowns**



**Board-to-Board Vertical Receptacles, Double Row, .050 x .050 [1.27 x 1.27] Centerline**

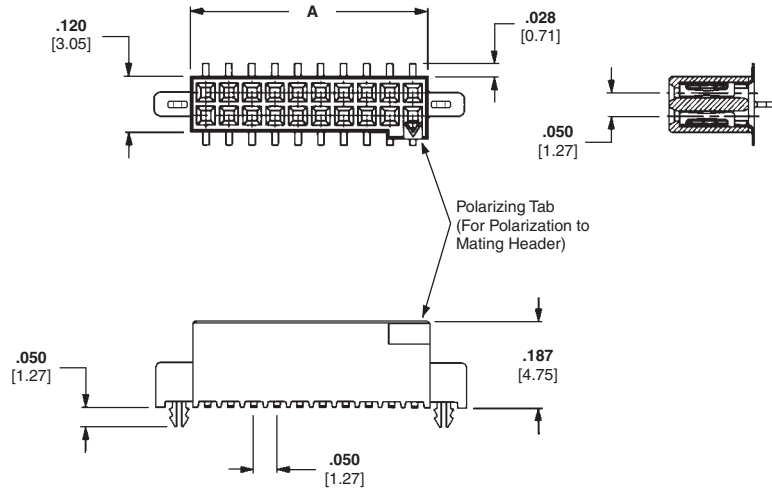


**Material and Finish**

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel



**Related Product Data**

**Mating Headers** — pages 16, 19

**PC Board Layouts** — page 17

**Performance Specifications** — page 24

**Technical Documents** — page 24

**Product Specification** 108-1332

**Application Specification** 114-7010

**Packaging:** Tube or Tape and Reel

No. of Pos.	Dimension A	Receptacle Part Numbers		
		Tube	Tape and Reel*	No Hold Down w/Vacuum Cover
10	.266 [6.75]	5-104652-1	5-147384-1	5-147413-1
20	.516 [13.11]	5-104652-2	5-147384-2	5-147413-3
30	.766 [19.46]	5-104652-3	5-147384-3	5-147413-4
40	1.016 [25.81]	5-104652-4	5-147384-4	—
50	1.266 [32.16]	5-104652-5	5-147384-5	5-147413-2
60	1.516 [38.51]	5-104652-6	5-147384-6	—
70	1.766 [44.86]	5-104652-7	5-147384-7	—
80	2.016 [51.21]	5-104652-8	5-147384-8	—
100	2.516 [63.91]	6-104652-0	5-147384-9	—

\* Parts packaged in tape and reel have vacuum pick and place cover. See PC Board Layout on page 17.

**Note:** All part numbers are RoHS compliant.

**Board-to-Board Vertical Headers, Double Row, .050 x .050  
[1.27 x 1.27] Centerline**



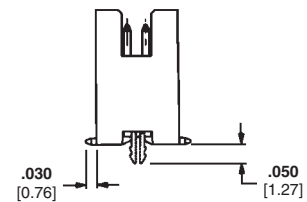
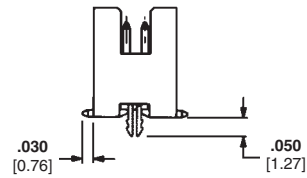
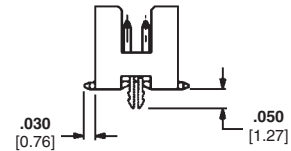
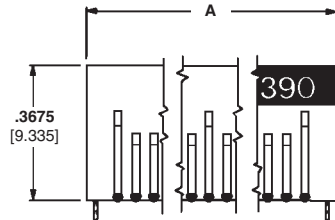
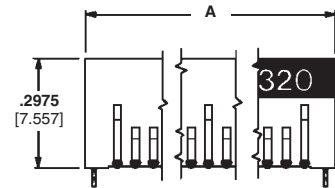
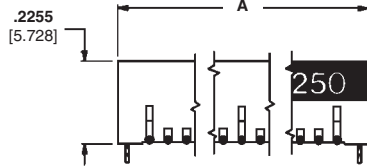
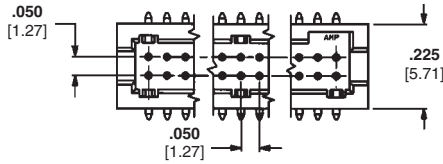
For .250 [6.35] Mated Height



For .320 [8.13] Mated Height



For .390 [9.91] Mated Height



**Material and Finish**

**Housing**—Glass-filled thermoplastic, black, 94V-0 rated

**Contacts**—Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.00381] tin on solder tail, with entire contact underplated .000050 [0.00127] nickel

**Holddown**—Copper alloy; plated .000150 [0.00381] tin over .000050 [0.00127] nickel

**Related Product Data**

**Mating Receptacles** — page 15, 21 (without latch only)

**PC Board Layouts** — page 17

**Performance Specifications** — page 24

**Technical Documents** — page 24

**Product Specification** 108-1332

**Application Specification** 114-7010

**Packaging:** Tube or Tape and Reel

No. of Pos.	Dimension A	Header Part Numbers								
		.250 [6.35] Mated Height			.320 [8.13] Mated Height		.390 [9.91] Mated Height			
		Tubes	Tape & Reel*		Tubes	Tape & Reel*	Tubes		Tape & Reel*	
		Hold Down	No Hold Down			Hold Down	No Hold Down			
10	.372 [9.44]	5-104655-1	5-147381-1	5-147121-1	5-104656-1	5-147382-1	5-104693-1	—	5-147383-1	
20	.622 [15.79]	5-104655-3	5-147381-2	5-147121-2	5-104656-2	5-147382-2	5-104693-2	—	5-147383-2	
30	.872 [22.14]	5-104655-4	5-147381-3	—	5-104656-3	5-147382-3	5-104693-3	—	5-147383-3	
40	1.122 [28.49]	5-104655-5	5-147381-4	—	5-104656-4	5-147382-4	5-104693-4	—	5-147383-4	
50	1.372 [34.84]	5-104655-6	5-147381-5	—	5-104656-5	5-147382-5	5-104693-5	—	5-147383-5	
60	1.622 [41.19]	5-104655-7	5-147381-6	—	5-104656-6	5-147382-6	5-104693-6	—	5-147383-6	
70	1.872 [47.54]	5-104655-8	5-147381-7	—	5-104656-7	5-147382-7	5-104693-7	—	5-147383-7	
80	2.122 [53.89]	5-104655-9	5-147381-8	—	5-104656-8	5-147382-8	5-104693-8	—	5-147383-8	
90	2.372 [60.24]	—	—	—	5-104656-9	—	5-104693-9	—	—	
100	2.622 [66.59]	6-104655-1	5-147381-9	—	6-104656-0	5-147382-9	6-104693-0	5-147503-1	5-147383-9	

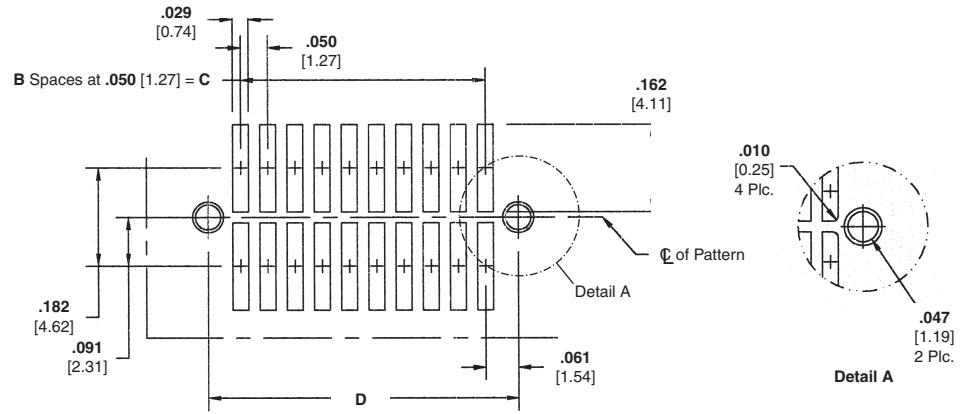
\*Parts packaged in tape and reel have vacuum pick and place cover. See PC Board Layout on page 17.

**Note:** All part numbers are RoHS compliant.

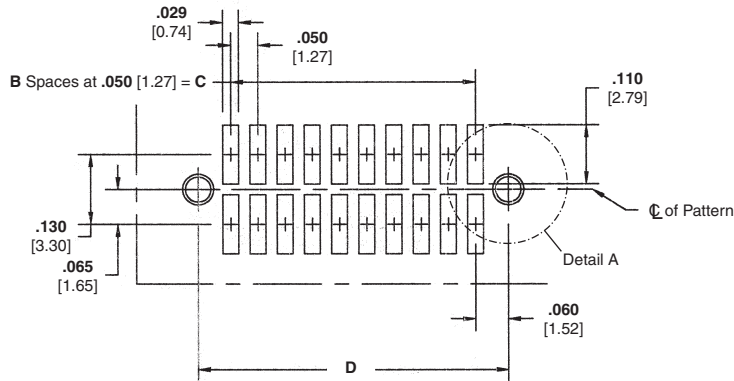
Vertical Headers,  
Double Row  
**2**

## Recommended PC Board Layouts for Vertical Connectors

### Headers



### Receptacles



No. of Pos.	Receptacle Dimensions			Header Dimensions		
	B	C	D	B	C	D
10	4	.200 [5.08]	.320 [8.12]	4	.200 [5.08]	.322 [8.17]
20	9	.450 [11.43]	.570 [14.48]	9	.450 [11.43]	.572 [14.52]
30	14	.700 [17.78]	.820 [20.83]	14	.700 [17.78]	.822 [20.87]
40	19	.950 [24.13]	1.070 [27.19]	19	.950 [24.13]	1.072 [27.22]
50	24	1.200 [30.48]	1.320 [33.53]	24	1.200 [30.48]	1.322 [33.57]
60	29	1.450 [36.83]	1.570 [39.88]	29	1.450 [36.83]	1.572 [39.92]
70	34	1.700 [43.18]	1.820 [46.23]	34	1.700 [43.18]	1.822 [46.27]
80	39	1.950 [49.53]	2.070 [52.58]	39	1.950 [49.53]	2.072 [52.62]
90	44	2.200 [55.88]	2.320 [58.93]	44	2.200 [55.88]	2.322 [58.97]
100	49	2.450 [62.23]	2.570 [65.28]	49	2.450 [62.23]	2.572 [65.32]

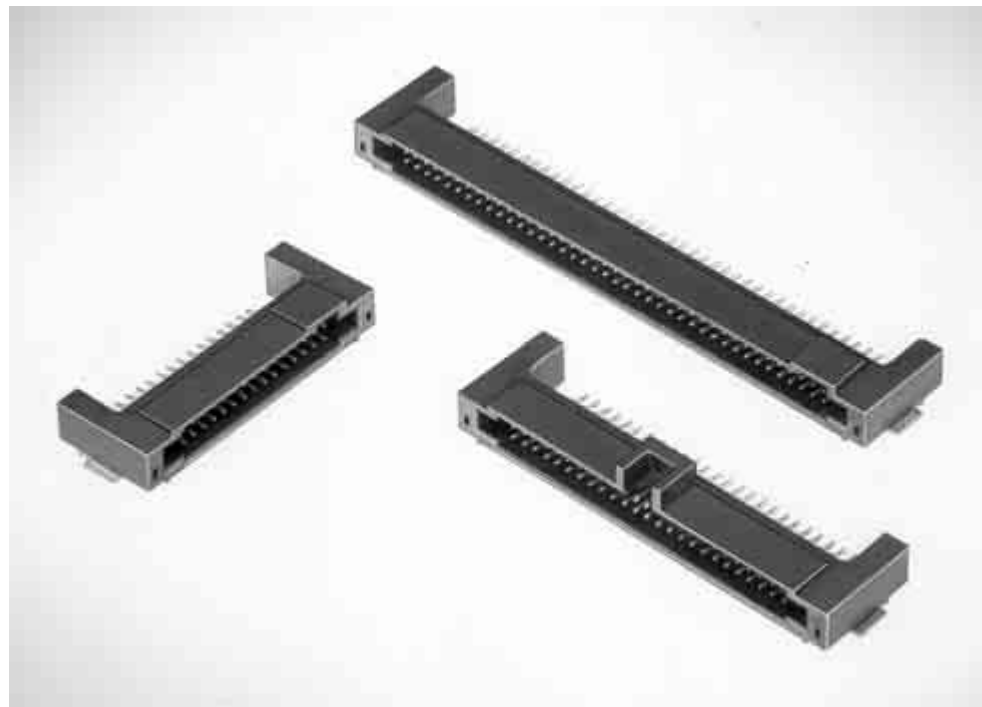
**Note:** Refer to Tyco Electronics Customer Drawings for additional PC board layout information and dimensional tolerances.

**Note:** All part numbers are RoHS compliant.

## Board-to-Board Right-Angle Headers

### Product Facts

- Surface-mount products for right-angle board-to-board and cable-to-board applications
- Double-row, right-angle shrouded headers
- High density .050 x .050 [1.27 x 1.27] centerline grid
- Latching and non-latching versions available
- Non-protrusive metallic holddowns
- Metallic tabs, when soldered to PC board pad, provide added mechanical support
- Duplex plated post contacts; gold plated on mating area, tin plated on tails
- Compatible with standard surface-mount processing (VPR and IR)
- Standoffs on header housings allow for drainage of processing fluids
- All headers are polarized
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189



AMPMODU 50/50 Grid Right-Angle Headers will accommodate a variety of high density packaging applications; right-angle board-to-board applications when mated with vertical receptacles (page 15) and right-angle cable-to-board applications when mated with cable connectors (page 21). The small .050 x .050 [1.27 x 1.27] centerline contact spacing allows efficient use of the PC board area.

Mechanical support of the headers to the PC board is provided by non-protrusive metallic holddowns designed for .062 [1.57] or thicker PC boards. These holddowns are of the same

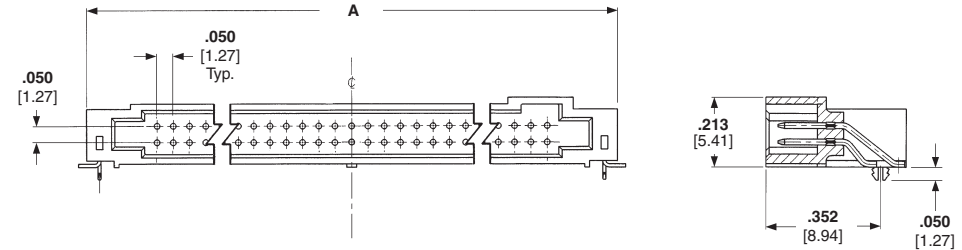
design as those used in the vertical headers (page 16) and receptacles (page 15). There are also metallic tabs that are soldered to the surfaces of the PC board pads for added support.

AMPMODU 50/50 Grid Right-Angle Headers are available in double-row, in either latching or non-latching versions, and in sizes ranging from 10 through 100 positions (in 10 position increments). The latching version provides positive retention when mated with the latching cable connector (page 21). All headers feature polarization to help prevent misalignment during mating.

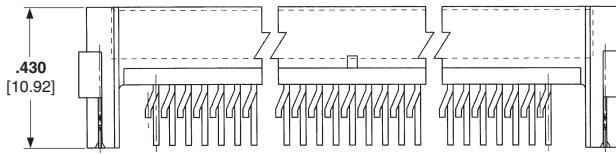
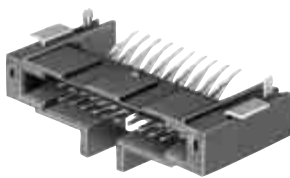


**Board-to-Board Right-Angle Headers, Double Row, .050 x .050 [1.27 x 1.27] Centerline**

**Non-Latching Header**



**Latching Header**



**Material and Finish**

**Housing** — Liquid crystal polymer, black, 94V-0 rated

**Contacts** — Copper alloy; duplex plated .000030 [0.00076] gold in mating area, .000150 [0.000381] tin on solder tail, with entire contact under-plated .000050 [0.00127] nickel

**Holddown** — Copper alloy; plated .0000150 [0.00381] tin over .000050 [0.00127] nickel

**Related Product Data**

**Mating Receptacles** — page 15, 21

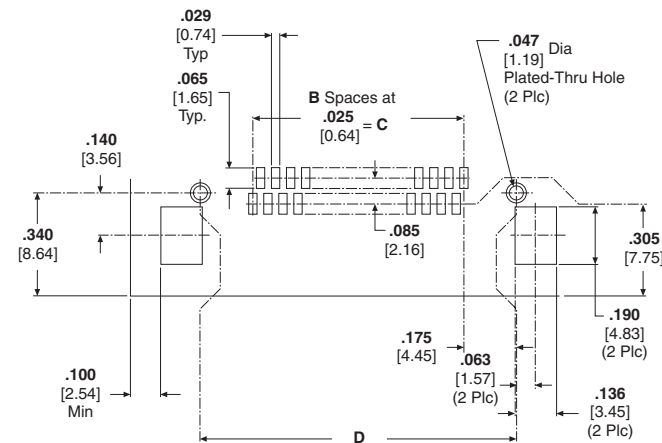
**Performance Specifications** — page 24

**Technical Documents** — page 24

**Product Specification** 108-1443

**Application Specification** 114-7010

**Packaging:** Tube



**Recommended PC Board Layout**



**Note:** Refer to Tyco Electronics Customer Drawings for additional PC board layout information and dimensional tolerances.

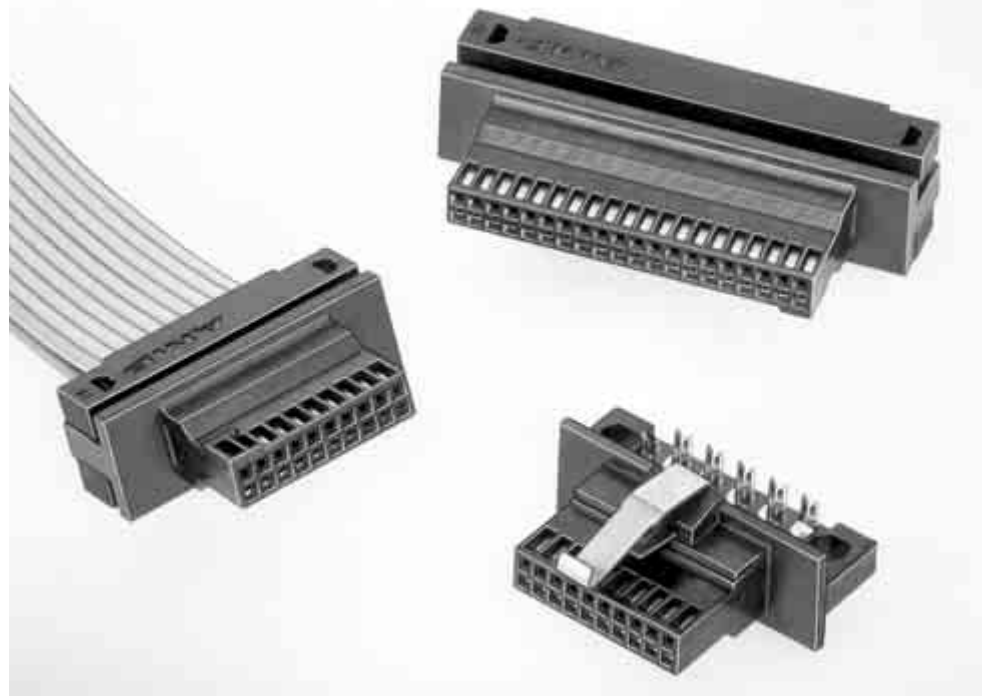
No. of Pos.	Dimensions				Header Part Numbers	
	A	B	C	D	Latching	Non-Latching
10	.630 [16.00]	9	.225 [5.72]	.550 [13.97]	5-104895-1	5-104894-1
20	.880 [22.35]	19	.475 [12.07]	.800 [20.32]	5-104895-2	5-104894-2
30	1.130 [28.70]	29	.725 [18.42]	1.050 [26.67]	5-104895-3	5-104894-3
40	1.380 [35.05]	39	.975 [24.77]	1.300 [33.02]	5-104895-4	5-104894-4
50	1.630 [41.40]	49	1.225 [31.12]	1.550 [39.37]	5-104895-5	5-104894-5
60	1.880 [47.75]	59	1.475 [37.47]	1.800 [45.72]	5-104895-6	5-104894-6
70	2.130 [54.10]	69	1.725 [43.82]	2.050 [52.07]	5-104895-7	5-104894-7
80	2.380 [60.45]	79	1.975 [50.17]	2.300 [58.42]	5-104895-8	5-104894-8
100	2.880 [73.15]	99	2.475 [62.87]	2.800 [71.12]	6-104895-0	6-104894-0

**Note:** All part numbers are RoHS compliant.

## Cable-to-Board Connectors

### Product Facts

- Double-row receptacle connectors provide cable-to-board connection capabilities for vertical headers (non-latching) and right-angle headers (latching and non-latching)
- IDC (Insulation Displacement Crimp) mass termination of solid or stranded round conductor .050 [1.27] centerline ribbon cable with PVC or polyethylene insulation
- Accommodates ribbon cable conductor sizes of 28 AWG [0.08-0.09 mm<sup>2</sup>] and 30 AWG [0.05 mm<sup>2</sup>] and insulation diameters up to .036 [0.91] maximum
- Reliable single beam receptacle contact design
- Duplex plated receptacle contacts; gold plated in mating area, tin in termination area
- Terminating covers (sold separately) provide both strain relief and protection to the termination area
- Sizes of 10, 20, 30, 40, 50, 60, 70, 80 and 100 positions
- Connectors available with or without metal latch
- Connectors without latches are polarized to help prevent mismatching
- Recognized under the Component Program of Underwriters Laboratories Inc.,  File No. E28476
- Certified by Canadian Standards Association  File No. LR7189



These double-row cable connectors, with a .050 x .050 [1.27 x 1.27] centerline contact spacing, provide cable-to-board connection capabilities for the AMPMODU 50/50 Grid Connector System. Cable connectors without a latch will mate with the vertical headers (page 16), while cable connectors with or without a latch can be used to mate with the right-angle headers (page 19).

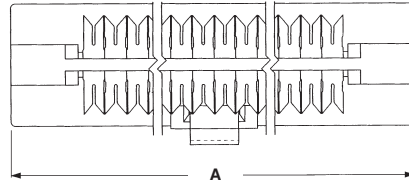
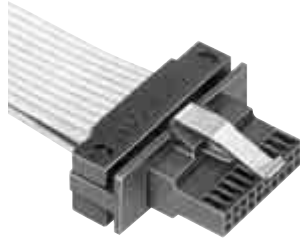
The cable connectors feature reliable single-beam IDC (insulation displacement crimp) contacts which are duplex plated with .000030 [0.00076] gold. These contacts can be mass terminated to either solid or

stranded round conductor ribbon cable with conductor sizes of 28 AWG [0.08-0.09 mm<sup>2</sup>] and 30 AWG [0.05 mm<sup>2</sup>] and a maximum insulation diameter of .036 [0.91]. During termination, the terminating covers, which must be purchased separately, assist in guiding the wire into the IDC contacts, then provide strain relief when fully seated. Actual termination is accomplished with the Tyco Electronics manual tooling shown on page 23.

The latching version of the cable connector is equipped with a metal latch which provides positive retention of the receptacle cable connector when mated with a surface-

mounted right-angle header. The cable connector without a metal latch features polarization to help prevent mismatching. All connectors are available in sizes ranging from 10 through 100 positions (in 10 position increments).

**Cable-to-Board Receptacle Connectors, Double Row, .050 x .050 [1.27 x 1.27] Centerline**



**Material and Finish**

**Housing** — Thermoplastic, black, 94V-0 rated

**Latch** — Stainless steel

**Contacts** — Phosphor bronze; duplex plated .000030 [0.00076] minimum gold in mating area, .000150 [0.00381] minimum tin on solder tail, with entire contact underplated .000050 [0.00127] minimum nickel

**Related Product Data**

**Mating Headers** — page 16, 19 (latching)

**Terminating Covers (Must be Purchased Separately, 2 Required per Connector)** — page 22

**Termination Tooling** — page 23

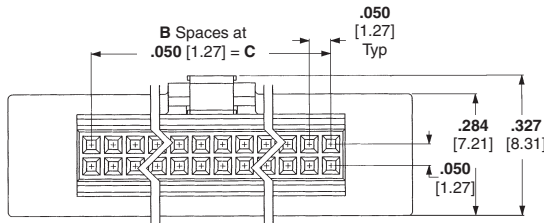
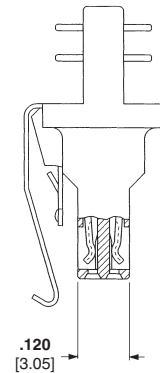
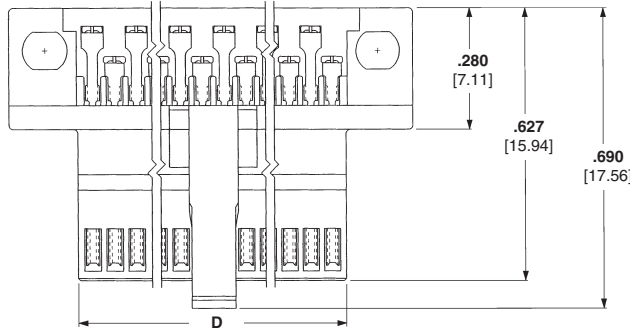
**Performance Specifications** — page 24

**Technical Documents** — page 24

**Product Specification** 108-1443

**Application Specification**  
408-9817, 408-9909

**Packaging:** Tube



No. of Pos.	Dimensions				Receptacle Part Numbers	
	A	B	C	D	With Latch	Without Latch
10	.578 [14.68]	4	.200 [5.08]	.266 [6.76]	5-104892-1	5-104893-1
20	.828 [21.03]	9	.450 [11.43]	.516 [13.11]	5-104892-2	5-104893-2
30	1.078 [27.38]	14	.700 [17.78]	.766 [19.46]	5-104892-3	5-104893-3
40	1.328 [33.73]	19	.950 [24.13]	1.016 [25.81]	5-104892-4	5-104893-4
50	1.578 [40.08]	24	1.200 [30.48]	1.266 [32.16]	5-104892-5	5-104893-5
60	1.828 [46.43]	29	1.450 [36.83]	1.516 [38.51]	5-104892-6	5-104893-6
70	2.078 [52.78]	34	1.700 [43.18]	1.766 [44.86]	5-104892-7	5-104893-7
80	2.328 [59.13]	39	1.950 [49.53]	2.016 [51.21]	5-104892-8	5-104893-8
100	2.828 [71.83]	49	2.450 [62.23]	2.516 [63.91]	6-104892-0	6-104893-0

**Note:** All part numbers are RoHS compliant.

**Terminating Covers for Cable Connectors**



Cable Connector Terminating Cover, Double Row

**Material**

Glass-filled thermoplastic, black, 94V-0 rated

**Related Product Data**

**Connectors used with Covers** — page 21

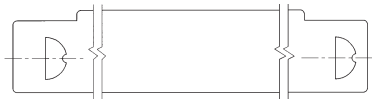
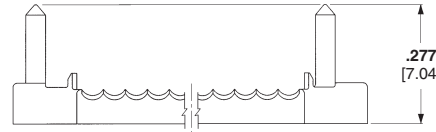
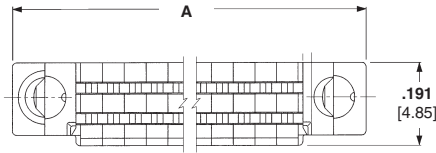
**Termination Tooling** — page 23

**Technical Documents** — page 24

**Product Specification** 108-1443

**Application Specification** 408-9817, 408-9909

**Packaging:** Plastic bag



No. of Pos.	Dimension A	Terminator Cover Part Numbers
10	.565 [14.35]	104891-1
20	.815 [20.70]	104891-2
30	1.065 [27.05]	104891-3
40	1.315 [33.82]	104891-4
50	1.565 [39.75]	104891-5
60	1.815 [46.10]	104891-6
70	2.065 [52.45]	104891-7
80	2.315 [58.80]	104891-8
100	2.815 [71.50]	1-104891-0

**Note:** Terminating covers must be purchased separately, two are required for each cable connector.

**Note:** All part numbers are RoHS compliant.

**Application Tooling for Cable Connectors**

The Manual Miniature Application Frame Assembly 91295-1, equipped with a Cover Closing Kit 543518-1, is used for the IDC termination of ribbon cable to the cable connectors shown on page 21.

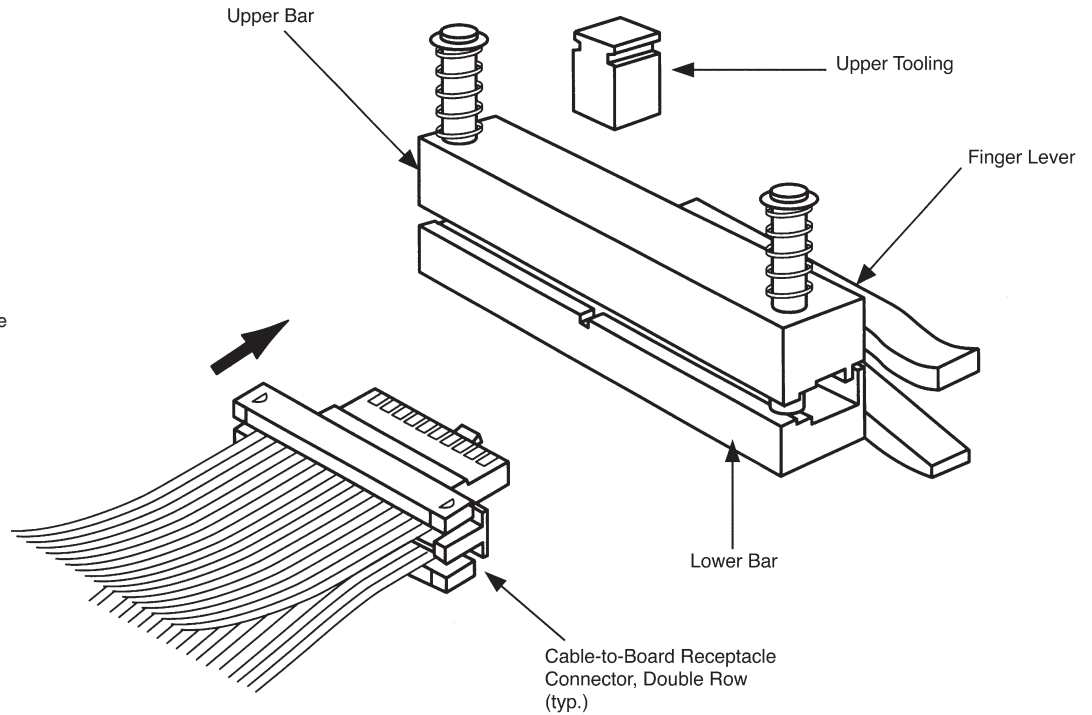
Prior to termination, the covers must be partially assembled onto a connector housing, the cable inserted between the covers and contacts and the covers preclosed by hand, clamping the cable in place.

In the Manual Miniature Application Frame Assembly, the covers are fully seated to complete the mass termination and provide strain relief for the completed connection.

For tooling information, call Technical Support Center **1-800-522-6752**.



**Manual Miniature Application Frame Assembly 91295-1 with Cover Closing Kit 543518-1**



**Note:** Refer to Tyco Electronics Instruction Sheets 408-9817 (Frame Assembly 91295-1) and 408-9909 (Cover Closing Kit 543518-1) for complete termination/tooling information.

**Note:** All part numbers are RoHS compliant.



## Performance Specifications

### Board-to-Board Connectors, Vertical and Right-Angle

**Mating Force:** 6.4 oz (1.78 N) max. per contact  
**Unmating Force:** 1.0 oz [0.28 N] min. per contact  
**Durability:** Tested to 200 cycles min.  
**Current Rating:** (30°C T rise): .5 ampere per contact  
**Operating Temperature Range:** -65°C to +105°C  
**Termination Resistance:** 16 milliohms max. (initial)  
**Insulation Resistance:** 5000 megohms min. (initial)  
**Dielectric Withstanding Voltage:** 300 VAC

### Cable-to-Board Connectors

**Mating Force:** 6.4 oz (1.78 N) max. per contact  
**Unmating Force Without Latch:** .5 oz [0.14 N] min. per contact  
**Durability:** Tested to 200 cycles min.  
**Current Rating:** (10°C T rise): .5 ampere per contact  
**Operating Temperature Range:** -65°C to +105°C  
**Termination Resistance:** 25 milliohms max. (initial and final)  
**Insulation Resistance:** 5000 megohms min. (initial)  
**Dielectric Withstanding Voltage:** 300 VAC

## Technical Documents

Various technical documents are available for your use:

**Product Specifications** describe technical performance characteristics and verification tests. They are intended for the Design, Component and Quality Engineer.

108-1332	AMPMODU 50/50 Grid Vertical Board-to-Board Connectors
108-1443	AMPMODU 50/50 Grid Right-Angle Board-to-Board and Cable Connectors

**Application Specifications** describe requirements for using the product in its intended application and/or crimping information. They are intended for the Packaging and Design Engineer and the Machine Setup Person.

114-7010	AMPMODU 50/50 Grid Connector System
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**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-9817	Manual Miniature Application Frame Assembly 91295-1
408-9909	Cover Closing Kit 543518-1

**Note:** All part numbers are RoHS compliant.

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