

**tyco**

*Electronics*

Eurocard Connectors per  
DIN 41612 and IEC 60603-2



**AMP**

**Signal Integrity Services: Taking SI to the Next Level**

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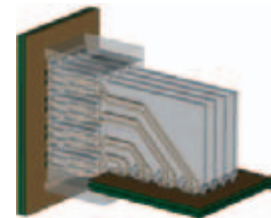
**For more info:**

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<http://www.tycoelectronics.com/products/simulation/>

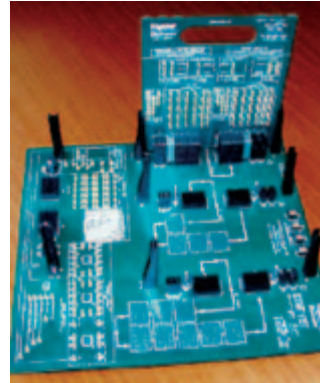
**Solutions**

Our goal is to apply system-level expertise to design, simulate, and verify a system that meets your performance goals. We have completed hundreds of system designs and have years of experience in system layout, design, simulation and product selection. Our modeling skills and techniques are second to none with an extensive library of Tyco Electronics product models ready to go to work on your design.



**Simulation**

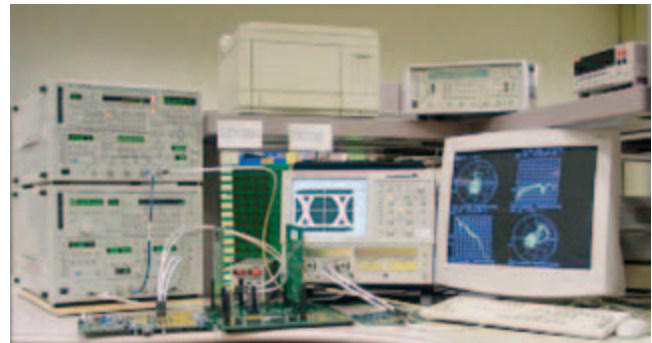
The Tyco Electronics Signal Integrity engineers use a very sophisticated suite of tools to provide accurate connector and system models to 20 GHz and beyond. Whether we are analyzing a connector or an entire system, Tyco Electronics has the tools and expertise to get the right answer. Our tool suite includes 2D and 3D full-wave analysis, with solutions in both the time and frequency domains.



**Models**

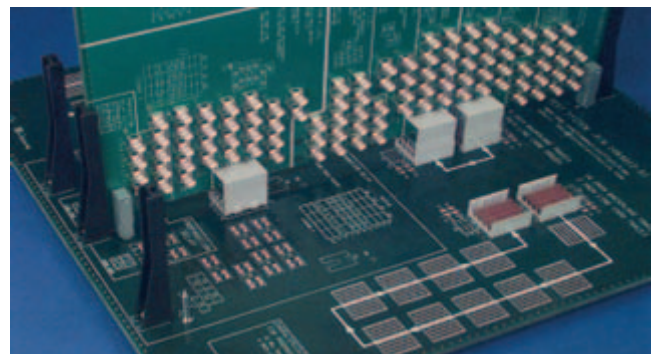
Tyco Electronics provides a variety of tools to aid customers in their design:

- Spice single-line and multi-line models
- S-parameter models
- Customer evaluation boards using realistic system implementations
- Electrical Performance Reports (EPRs) with information on many high speed products.



**Testing**

With measurement capabilities beyond 10 Gbps and 50 GHz, Tyco Electronics can characterize and provide detailed measurements of various products. Measurements of a product within a system can be invaluable to assure the successful implementation of a design, including measurements from silicon companies that have teamed with Tyco Electronics.



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- Catalogs
- Technical Documents
- Product Samples
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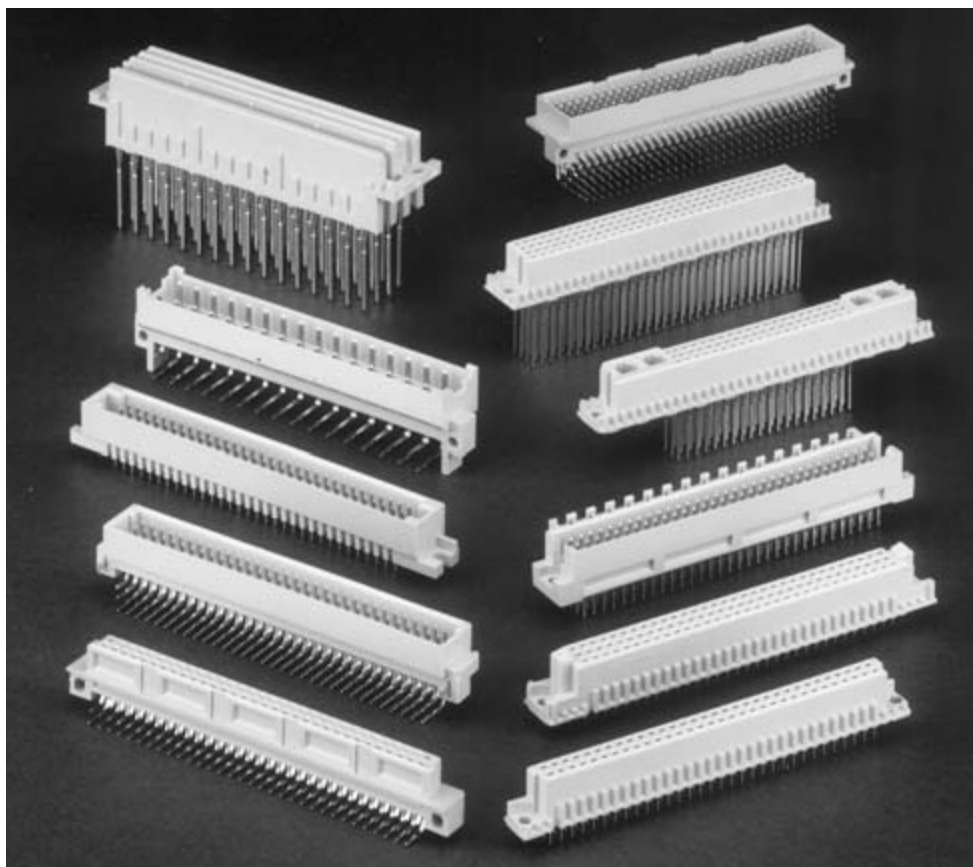
A copy of the certificate is available upon request.



## Eurocard Connectors

### Product Facts

- Meets DIN 41612 and IEC 60603-2
- Two-piece reliability
- Polarized housings
- Flame retardant
- Types B, C, D, F, G, M, Q and R
- Standard DIN sizes as well as half sizes, and expanded sizes
- ACTION PIN post assemblies for reliability and economical motherboard assembly
- Various post lengths
- Selective contact loading
- Global manufacturing capability
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



Tyco Electronics Eurocard Connectors incorporate internationally accepted design advantages of DIN 41612 and IEC 60603-2 two-piece connectors with the universally known quality, service and delivery of Tyco Electronics products. The Eurocard Connectors meet DIN 41612 and IEC 60603-2 specifications.

Tyco Electronics has worldwide manufacturing capabilities for Eurocard products including standard board-to-board, wire-to-board, ribbon cable-to-board and high current connectors as well as other product configurations.


### Eurocard Connectors for Common Bus System Application

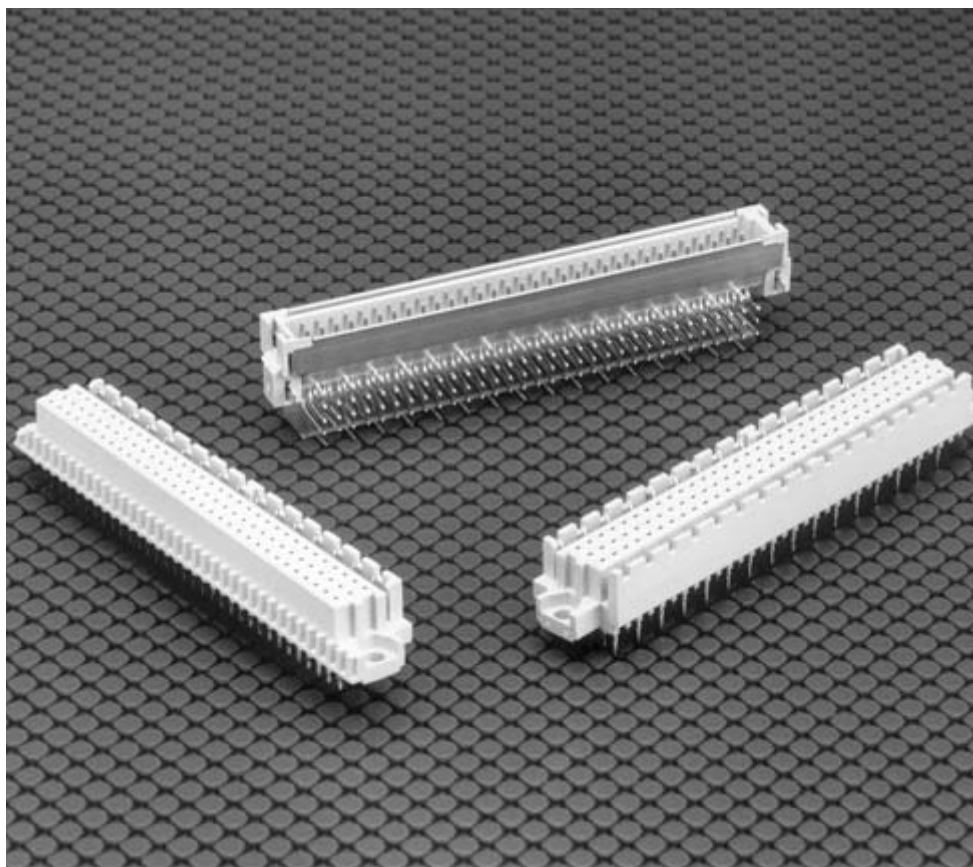
The Eurocard Connectors listed below provide high reliability and economy in packages compatible with the industry standard for printed circuit board computer backplane bus system application.

Common Bus Systems	Eurocard Connectors	Part Number		Page Number
		Pin	Receptacle	
STE Bus	Type B, 64-Position	536052-5	650861-5	14, 15
CIMBUS	Type B, 64-Position	536052-5	650861-5	14, 15
FUTUREBUS	Type C, 96-Position	650473-5	535043-5	17, 20, 21
VMEbus	Type C, 96-Position	650473-5	535043-5	17, 20, 21
MULTIBUS (II)	Type C, 96-Position	650473-5	535043-5	17, 20, 21
NUBUS	Type C, 96-Position	650473-5	535043-5	17, 20, 21
VXI Bus	Type C, 96-Position	650473-5	535043-5	17, 20, 21
VME64X	Type C, 160-Position	—	1-148445-5	27
VME64X	Type C, 160-Position	—	148452-5	27

### Enhanced Eurocard Connectors

#### Product Facts

- Compatible with existing type C DIN 41612 connectors and VME bus applications
- Upgrades existing systems with minimal design change
- Additional low inductance, low resistance grounds
- Lowers common mode noise
- Make first/break last contacts provide ESD protection
- Pin headers with high temperature plastic housings
- Pin headers compatible with vapor phase and IR solder reflow process
- Boardlocks provide hold-down during soldering process
- Press-fit ACTION PIN contacts eliminate need for soldering on backplane
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



Taking advantage of higher logic speeds to increase performance of computer systems, VME designers find themselves faced with problems such as common mode noise, crosstalk and limited I/O between daughtercards and the backplane.

The Enhanced Eurocard connector provides additional grounds while maintaining the standard Eurocard connector interface. Also, the Enhanced Eurocard connector substantially lowers common mode noise, permitting designers to use faster logic families.

The Enhanced Eurocard connector is cost competitive and provides customers with superior electrical performance, while maintaining the downward compatibility to standard VME daughtercards.

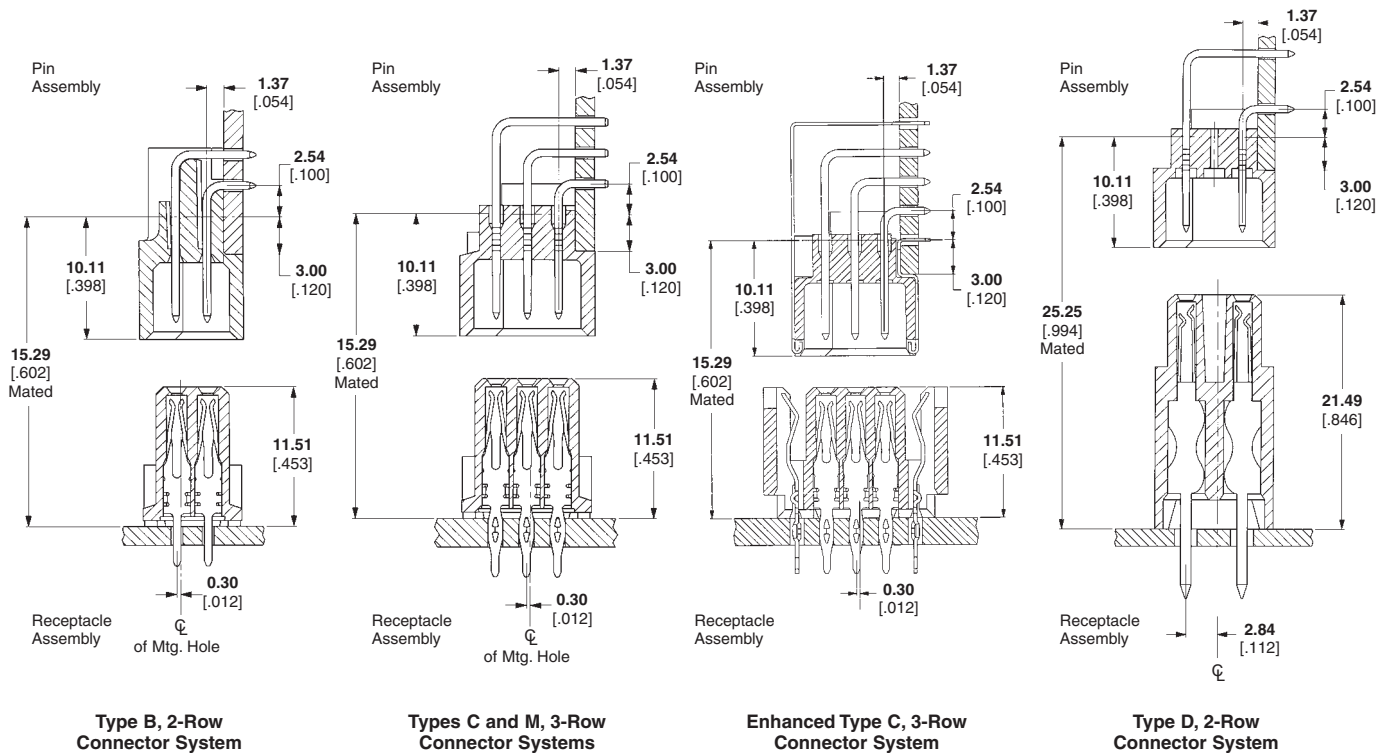
The following performance requirements are for Levels I, II and III of the DIN 41612 specification. Refer to Test Report 501-170 for AMP Eurocard Connector Level II test results.

**Fold out pages 7 & 8 for Eurocard Connector System Overview.**

**DIN 41612 Performance Levels**

	Level I	Level II	Level III
<b>Test Batch P</b>			
Dimensional Check	Yes	Yes	Yes
Contact Resistance	20 milliohms	20 milliohms	—
Insulation Resistance	1 E 12 ohms	1 E 12 ohms	1 E 11 ohms
Dielectric Strength	1000 V	1000 V	1000 V
<b>Test Batch AP</b>			
Withdrawal Force (Single Pin)	0.15 N [.54 oz] Min.	0.15 N [.54 oz] Min.	0.15 N [.54 oz] Min.
Mating and Unmating Force (96-Pos.)	90.7 N [20.4 lb] Max.	90.7 N [20.4 lb] Max.	90.7 N [20.4 lb] Max.
Solderability	Yes	Yes	Yes
Dielectric Strength	1000 V	1000 V	—
Vibration	10-2000 Hz, 20G	10-500 Hz, 6G	—
Shock	490 m/s <sup>2</sup> (50G)	—	—
Acceleration	980 m/s <sup>2</sup>	—	—
Rapid Temperature Change	-55°C, +125°C	-55°C, +125°C	—
Insulation Resistance	1 E 12 ohms	1 E 12 ohms	—
Dielectric Strength	1000 V	1000 V	—
Visual Examination	Yes	Yes	Yes
Climatic Sequence	5 cycles	5 cycles	—
Dry Heat	+125°C, 16 hours	+125°C, 16 hours	+125°C, 16 hours
Insulation Resistance (During Dry Heat)	1 E 11 ohms	1 E 11 ohms	1 E 10 ohms
Humid Heat	+55°C	+40°C	—
Cold	-55°C	-55°C	-55°C
Partial Vacuum	300M bar	300M bar	—
Dielectric Strength	300 V	300 V	—
Humid Heat	+55°C	+40°C	—
Insulation Resistance	1 E 10 ohms	1 E 10 ohms	1 E 9 ohms
Contact Resistance	20 milliohms	20 milliohms	20 milliohms
Dielectric Strength	1000 V	1000 V	—
Mating and Unmating	90.7 N [20.4 lb]	90.7 N [20.4 lb]	90.7 N [20.4 lb]
Visual Examination	Yes	Yes	Yes
<b>Test Batch BP</b>			
Withdrawal Force	0.15 N [.54 oz]	0.15 N [.54 oz]	0.15 N [.54 oz]
Durability	250 cycles	200 cycles	50 cycles
Industrial Atmosphere	21 days SO2	4 days SO2	—
Contact Resistance	20 milliohms	20 milliohms	—
Durability	250 cycles	200 cycles	—
Insulation Resistance	1 E 12 ohms	1 E 12 ohms	—
Dielectric Strength	1000 V	1000 V	—
Withdrawal Force	0.15 N [.54 oz]	0.15 N [.54 oz]	0.15 N [.54 oz]
Visual Examination	Yes	Yes	Yes
Static Axial Force	90 N [20.25 lb]	—	—
<b>Test Batch CP</b>			
Humid Heat	56 days	56 days	—
Insulation Resistance	1 E 10 ohms	1 E 10 ohms	—
Contact Resistance	20 milliohms	20 milliohms	—
Dielectric Strength	1000 V	1000 V	—
Visual Examination	Yes	Yes	—
<b>Test Batch DP</b>			
Durability	250 cycles	200 cycles	—
Electric Load at High Temperature	1 ampere at 70°C	1 ampere at 70°C	—
Contact Resistance	20 milliohms	20 milliohms	—
Dielectric Strength	1000 V	1000 V	—
Discharge Voltage	1000 V	1000 V	—
Visual Examination	Yes	Yes	—
<b>Test Batch EP</b>			
Mechanical Strength of Terminals	20 N [4.5 lb]	20 N [4.5 lb]	—
Contact Mount in Use	10 N [2.25 lb]	10 N [2.25 lb]	—
Growth of Mold	Yes	—	—
Visual Examination	Yes	—	—
Combustibility	10 sec burning	—	—

**Overview of Eurocard Connector System**

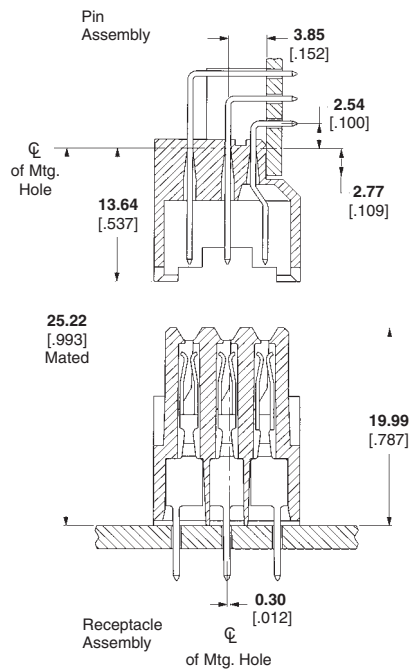


	Type B	Type C/Enhanced Type C (Signal Contacts)**/Type M (Signal Contacts)	Type D
Catalog Pages	14-16	17-24, 28-31/25-27/44, 46, 47	34, 35
Number of Positions (Max.)	64	96	32
Row Levels	A & B	A, B & C	A & C
Grid in inches fully loaded (Pitch and row distance)	Receptacle Assembly	<b>2.54 x 2.54</b> [.100 x .100]	<b>5.08 x 5.08</b> [.200 x .200]
	Pin Assembly	<b>2.54 x 2.54</b> [.100 x .100]	<b>5.08 x 5.08</b> [.200 x .200]
Minimum adjacent mounting space required	<b>10.2</b> [.400]	<b>12.7</b> [.500]	
<b>Performance Specifications:</b>			
Current Rating	Per DIN 41612*		
Voltage Rating	250 VAC		250 VAC
Dielectric Rating	1000 VAC		1.55 KV max.
Contact Resistance	15 milliohms initial at 100 ma and 50 mv, open circuit		15 milliohms
Insulation Resistance	10 <sup>6</sup> megohms after temperature cycling environment		
Temperature Rating	-55°C to +125°C, except EUROLATCH Connectors, +105°C max.		
Durability	Per DIN 41612, Level I, II or III		
Mating Force	Less than <b>0.94 N</b> [3.4 oz] Avg. per contact		
Unmating Force	<b>0.15 N</b> [.54 oz] min. per contact after three mating cycles		

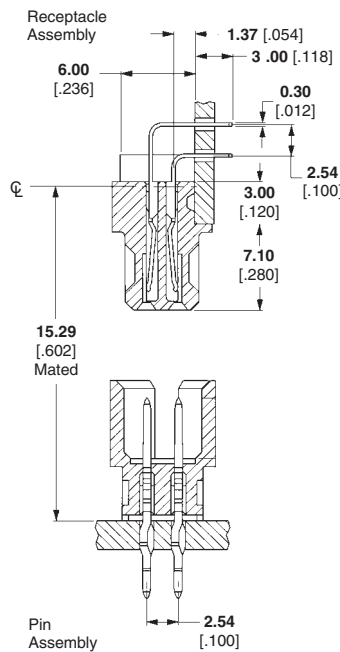
\* See derating curve, page 10.

\*\* For additional electrical data, see page 11.

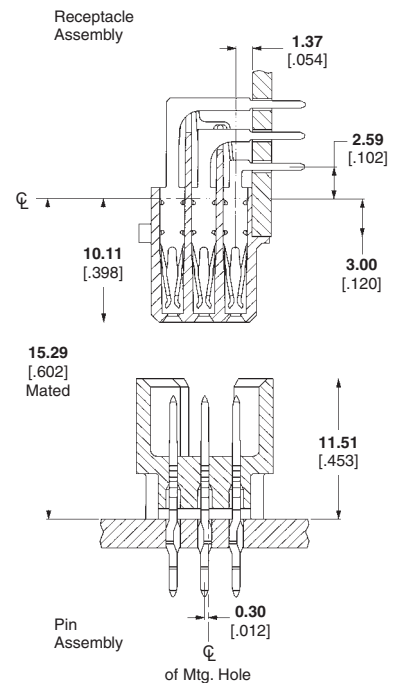
Overview of Eurocard Connector System (Continued)



Type F, 3-Row Connector System



Type Q, 2-Row Connector System



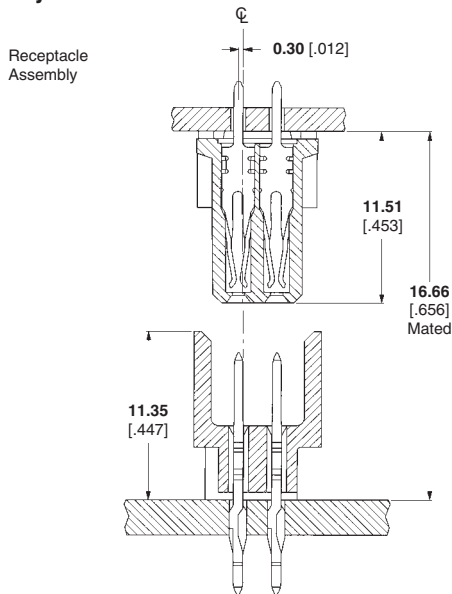
Type R, 3-Row Connector System

Type F	Type G (Not Shown)	Type Q	Type R
36-40	41	50, 51	52-57
48	64	64	96
Z, B & D	Z, B, D & F	A & B	A, B & C
5.08 x 5.08 [.200 x .200]		2.54 x 2.54 [.100 x .100]	
5.08 x 2.54 [.200 x .100]†	Not available	2.54 x 2.54 [.100 x .100]	
15.2 [.600]	—	10.2 [.400]	12.7 [.500]
Per DIN 41612*			
250 VAC		250 VAC	
1.55 KV max.		1000 VAC	
15 milliohms		15 milliohms initial at 100 ma and 50 mv, open circuit	
10 <sup>6</sup> megohms after temperature cycling environment			
-55°C to +125°C			
Per DIN 41612, Level I, II or III			
Less than 0.94 N [3.4 oz] Avg. per contact			
0.15 N [.54 oz] min. per contact after three mating cycles			

\* See derating curve, page 10.  
† At solder side.

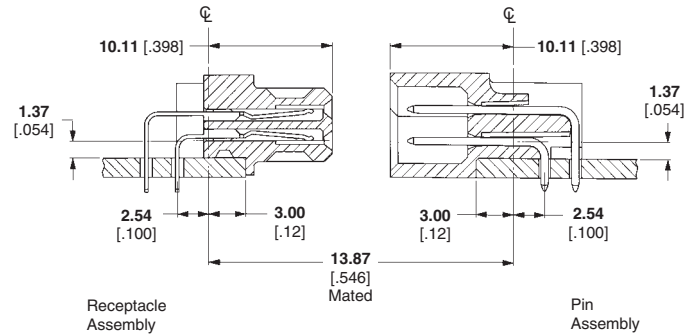


Mixed Styles



Pin Assembly

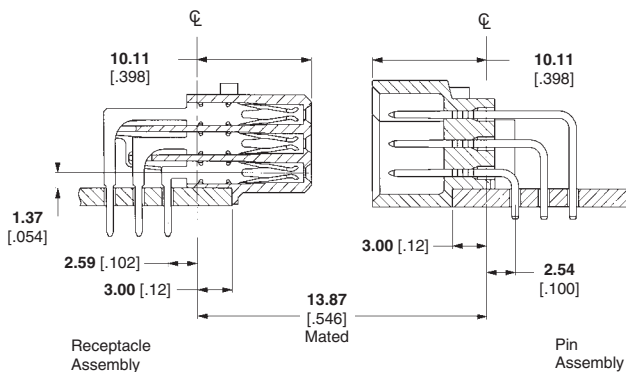
**2-Row  
Type B Receptacle Assembly,  
Type Q Pin Assembly**  
(See Note below)



Receptacle Assembly

Pin Assembly

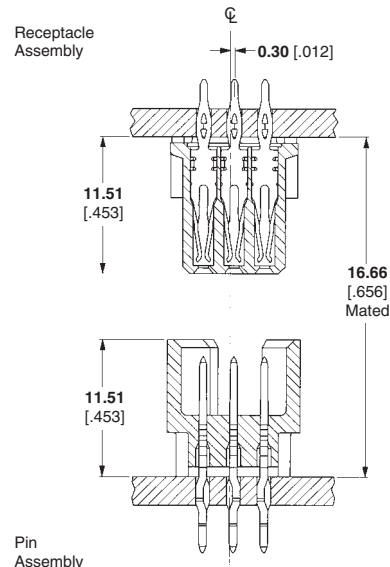
**2-Row  
Type Q Receptacle Assembly,  
Type B Pin Assembly**  
(See Note below)



Receptacle Assembly

Pin Assembly

**3-Row  
Type R Receptacle Assembly,  
Type C Pin Assembly**  
(See Note below)



Pin Assembly

**3-Row  
Type C Receptacle Assembly,  
Type R Pin Assembly**  
(See Note below)

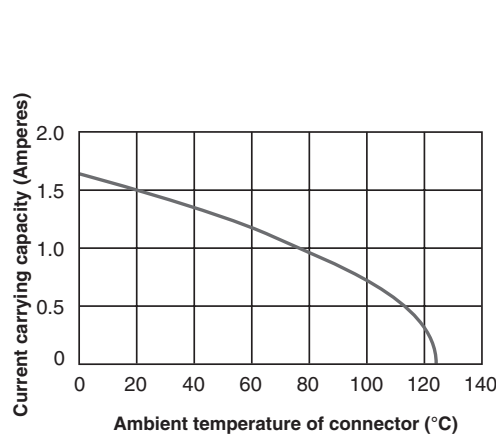
**Note:** When connector styles are mixed (Types C and R or B and Q), the connector circuit numbers will not match; for example, position A1 of the pin assembly will mate with position A32 of the receptacle assembly.

**Current Carrying Capacity and Mating Conditions**

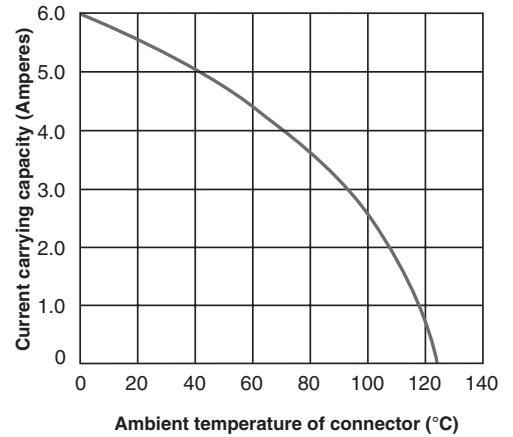
**Current Carrying Capacity (All Contacts Energized in Housing)**

Additional derating is recommended when paralleling contacts for power. For specific power applications, consult the Tyco Electronics Eurocard Connector Product Engineer.

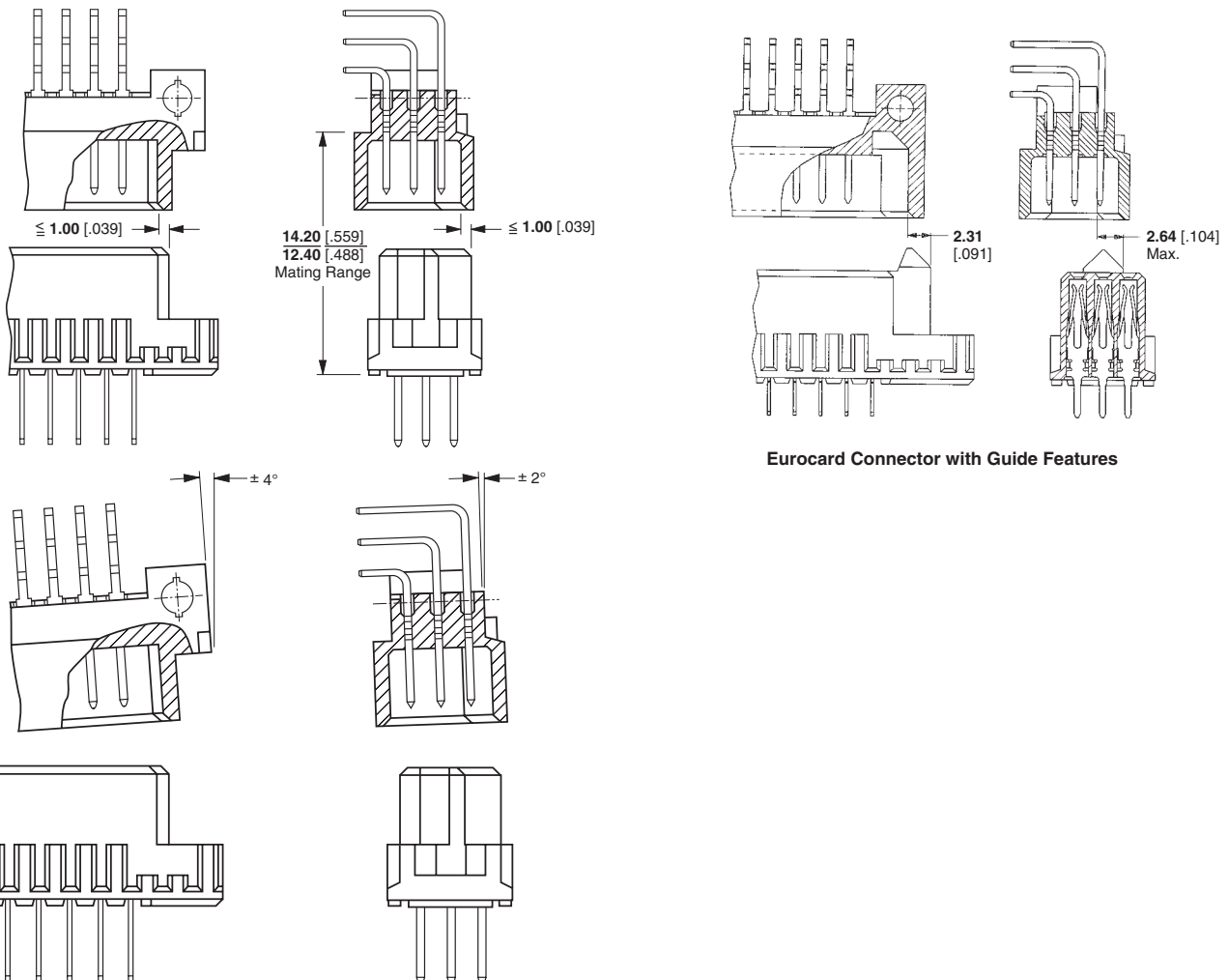
Types B, C, Q and R per DIN 41612



Types D, F and G per DIN 41612



**Mating Conditions**



Eurocard Connector with Guide Features

**Electrical Data for Enhanced Eurocard Connectors**

**Electrical Specifications**

Current Rating (Signal Contacts);	1.5 amperes (at +20° C)
Contact Resistance;	20 milliohms max.
Lower Shield Inductance;	<10 nanohenries
Lower Shield Resistance;	<10 milliohms
Upper Shield Inductance;	<20 nanohenries
Upper Shield Resistance;	<10 milliohms

**Electrical Performance**

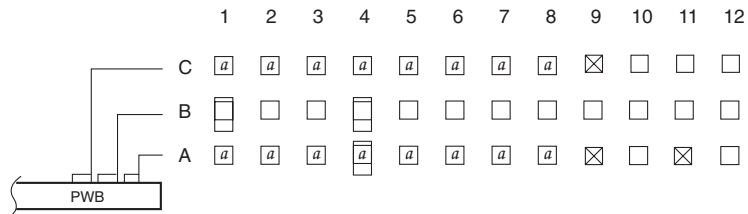
**Input:**

	Standard DIN	Enhanced DIN
Signal Type;	RAMP	RAMP
Signal Characteristics;	0-3V, Tr=2ns	0-3V, Tr=2ns
Driven Lines;	A1-A8, C1-C8	A1-A8, C1-C8

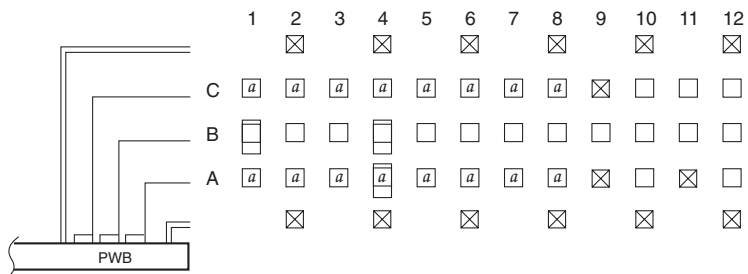
**Model Patterns:**

**Legend:**

- Active (Driven) Line
- Monitored Active Line
- Ground (Reference) Line
- Passive Line
- Monitored Passive Line



**Standard DIN VME Bus**



**Enhanced DIN VME Bus**

**Results:**

	Standard DIN VME Bus	Enhanced DIN VME Bus
(Position B1 Monitored)		
Far End Noise Voltage;	-600mv (20.0%)	-100mv (3.3%)
Near End Noise Voltage;	700mv (23.3%)	205mv (6.8%)
(Position B4 Monitored)		
Far End Noise Voltage;	-600mv (20.0%)	-90mv (3.0%)
Near End Noise Voltage;	700mv (23.3%)	200mv (6.7%)

**MFBL (Make First/Break Last) Connector System**

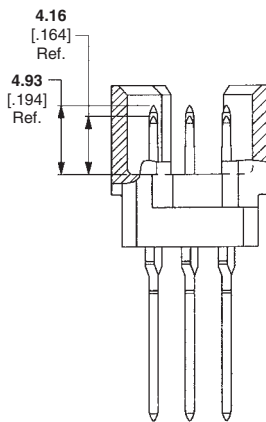
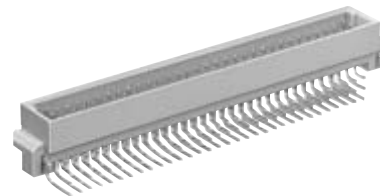
Tyco Electronics offers MFBL Eurocard pin assemblies in both vertical and right angle styles. The MFBL concept is achieved by loading a connector with staggered length pins. The long pins make contact first during connector mating, and break last during unmating. Tyco Electronics recommends the use of 4.93 [.194] high pins for MFBL positions and 4.17 [.164] high pins for signal positions. Also, Tyco Electronics

offers a 5.69 [.224] long mating post. However, it exceeds the lead-in envelope of the housing and is susceptible to stubbing on the receptacle mating face. If the 5.69 [.224] long post is required, Tyco Electronics recommends the use of Eurocard connectors with guides as shown on pages 18 and 22 (Type C assemblies)\*.

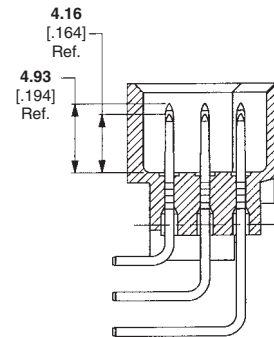
Type R Eurocard MFBL pin assemblies are available with either ACTION PIN

posts or solder posts. For press-fit MFBL applications, Tyco Electronics offers a connector with contacts of all one height which is pressed into a board using a Tyco Electronics patented programmable tool. This allows the customer to buy a standard connector and configure the tool to the specific MFBL sequence required. For a description of the use of this tool, request Tyco Electronics Instruction Sheet 408-9894.

MFBL (Make First/Break Last)  
Connector System



Type R



Type C

\*Note: If type R guides are required contact Tyco Electronics Product Engineering at the numbers listed below.

**MFBL (Make First/Break Last) Connector System** (Continued)

**Type B Pin Assemblies**

Number of Positions	Rows Loaded*	DIN Level	Part Number*
32	—	II	148103

\*Refer to customer drawing for specific loading patterns and part numbers.

**Type C Pin Assemblies**

Number of Positions	Rows Loaded*	DIN Level	Part Number*
96	—	II	536437
			536366 <sup>1</sup>
			148330 <sup>2</sup>

\*Refer to customer drawing for specific loading patterns and part numbers.

<sup>1</sup> With Boardlocks  
<sup>2</sup> Reverse Polarized

**Type R Pin Assemblies,  
4.57 [.180] Solder Post  
Length**

Number of Positions	Rows Loaded*	DIN Level	Part Number*
96	—	II	536744

\*Refer to customer drawing for specific loading patterns and part numbers.

**Type R Pin Assemblies,  
6.35 [.250] ACTION PIN  
(Press-Fit) Post Length,  
Programmable**

(for 2.36 [.093] Min. Thick PC Board)

Number of Positions	Rows Loaded	DIN Level	Part Number
96	A,B,C	II	536019-5
64	A,C	II	536098-5
150	A,B,C	II	536096-5

**Type R Pin Assemblies,  
Eye of the Needle  
Compliant Pin, 4.06 [.160]  
Post Length, Programmable**

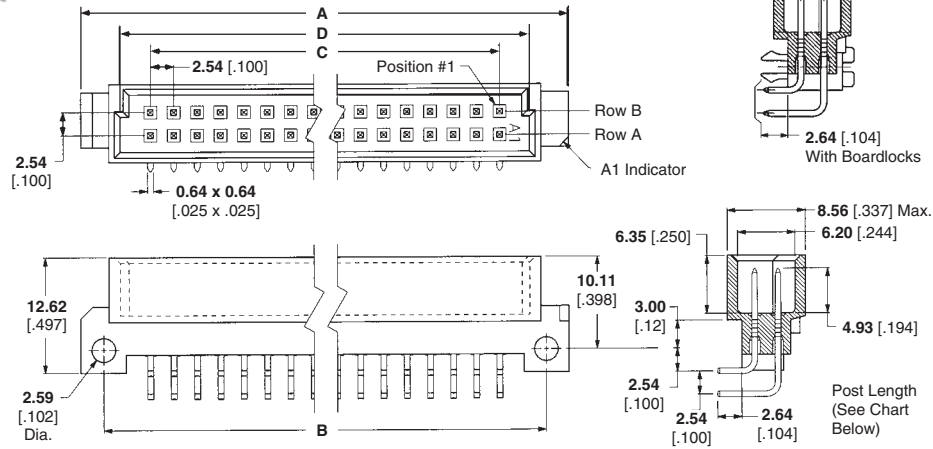
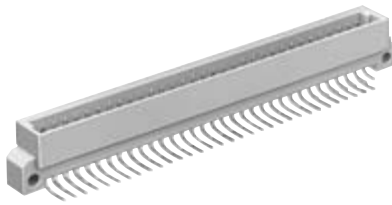
Number of Positions	Rows Loaded	DIN Level	Part Number
48	A,B,C	II	148472-4
96	A,B,C	II	148304-4

**Type R Pin Assemblies,  
13.23 [.521] ACTION PIN  
(Press-Fit) Post Length,  
Programmable**

(for 2.36 [.093] Min. Thick PC Board)

Number of Positions	Rows Loaded	DIN Level	Part Number
96	A,B,C	II	536067-5

**Type B Right Angle Pin Assemblies with Solder Posts**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- Common Bus Systems Application** — Page 4
- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 15, 16, 51
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 68, 69
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
64	A,B	93.98	88.90	78.74	85.29	2.64 .104	II	536052-5
		3.700	3.500	3.100	3.358	3.00 .118	I	536385-5 <sup>1</sup>
								1393644-1
								1393644-5 <sup>1</sup>
					3.30 .130	II	536379-5	

<sup>1</sup> With Boardlocks

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
32	A,B	53.34	48.26	38.10	44.65	2.64 .104	II	536053-5
		2.100	1.900	1.500	1.758	3.00 .118	I	536386-5 <sup>1</sup>
								1393644-3

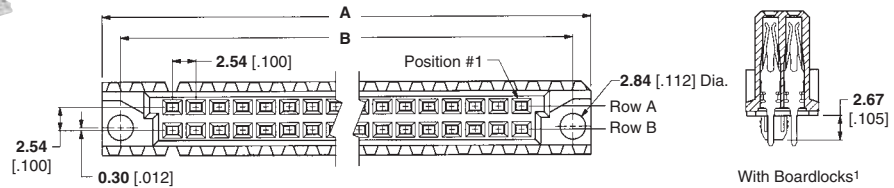
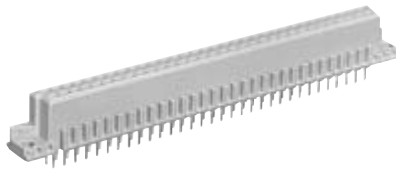
<sup>1</sup> With Boardlocks

**Third Size**

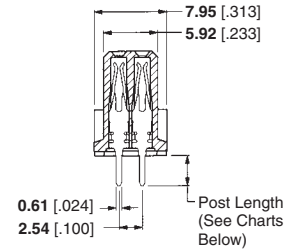
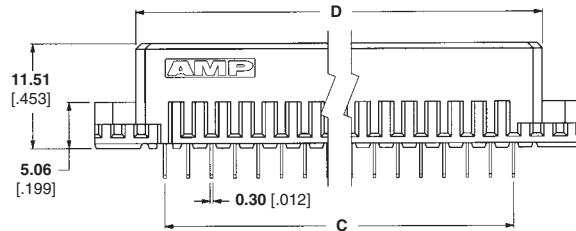
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
20	A,B	38.12	33.02	22.86	33.12	3.00 .118	II	5-1393644-6
		1.501	1.359	.900	1.304			

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

**Type B Vertical Receptacle Assemblies With Solder Posts for PC Board Mount**



With Boardlocks<sup>1</sup>



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- Common Bus Systems Application** — Page 4
- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 14, 50
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 68, 69
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
32	A	93.96	90.00	78.74	85.00	4.50	II	1-1393641-6
		3.700	3.543	3.100	3.346	.177		
						2.49	II	650859-5
						.098		
						2.90	II	7-1393640-8
				.114				
64	A,B	93.96	90.00	78.74	85.00	4.50	I	650860-5
		3.700	3.543	3.100	3.346	.177	III	536457-5 <sup>1</sup>
								1-1393640-7
								6-1393642-6
								650861-5
								650861-4
								536458-5 <sup>1</sup>
						13.00	II	1393642-3
						.512		
						20.00	II	3-1393642-2
						.787		

<sup>1</sup> With Boardlocks

**Half Size**

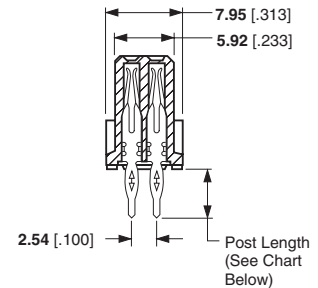
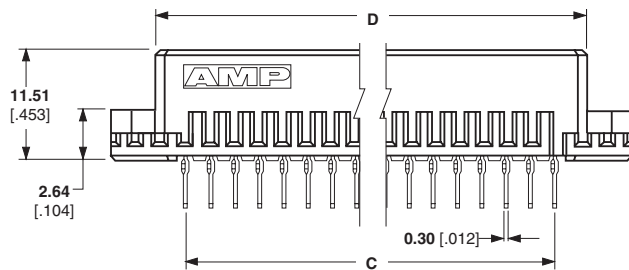
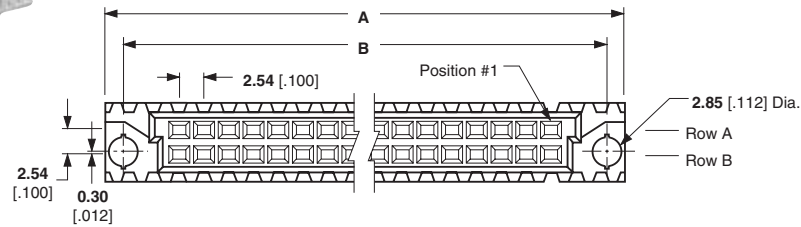
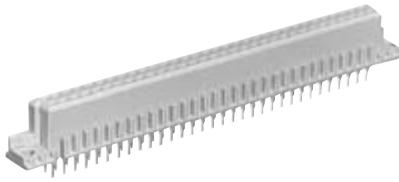
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
32	A,B	54.34	49.35	38.10	44.35	2.90	II	7-1393640-4
		2.100	1.943	1.500	1.746	.114		7-1393640-3 <sup>1</sup>
						3.30	II	536446-5
						.130		546460-5 <sup>1</sup>
						4.50	I	1-1393640-6
						.177	II	1-1393641-1
								650858-5
						4.57	II	536461-5 <sup>1</sup>
						.180		

<sup>1</sup> With Boardlocks

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
20	A,B	39.76	34.76	22.86	29.12	2.90	II	7-1393640-2
		1.565	1.368	.900	1.146	.114		
						4.50	II	1-1393641-0
						.177		

**Type B Vertical Receptacle Assemblies with ACTION PIN Posts for PC Board Mount, (0.64 [.025] Square and 0.30 x 0.61 [.012 x .024])**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 14, 50

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 68, 69

**ACTION PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6927

**Note:** Insertion tool required for 17 [.669] post length.

**Standard Size (for PC Board Thicknesses 1.57 [.062] and Above)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
64	A,B	93.96	90.00	78.74	85.00	3.70	II	3-1393637-6 <sup>1</sup>
		3.700	3.543	3.100	3.346	4.83		
						.146		
						.190	II	650865-5 <sup>1</sup>

<sup>1</sup> 0.30 x 0.61 [.012 x .024] Posts.

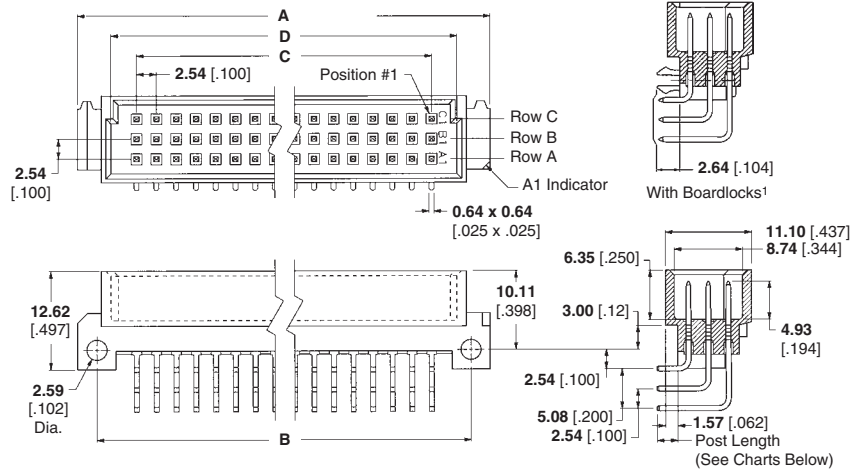
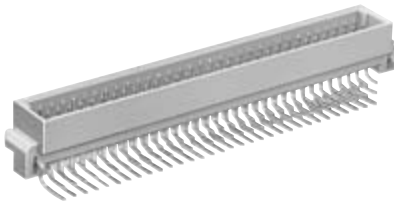
**Press-fit connectors on this page are toolless (flat rock).**

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
32	A,B	53.34	49.35	38.10	44.35	4.83	II	650864-5
		2.100	1.943	1.500	1.746	.190		



**Type C Right Angle Pin Assemblies with Solder Posts (with and without Boardlocks)**



**Material**

**Housing** — Glass filled polymer  
**Contacts and Boardlocks** — Copper alloy

**Related Product Data**

- Common Bus Systems Application** — Page 4
- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 20, 21, 23, 24, 29-31, 55
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 64, 67, 68
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number	
		A	B	C	D				
96	A,B,C	93.98 3.700	88.90 3.500	78.74 3.100	85.29 3.358	2.64 .104	II	650473-5	
								650913-5 <sup>1</sup>	
								536010-5 <sup>2</sup>	
						3.00 .118	I	1-1393644-6	
								9-1393644-1	
								8-1393640-9 <sup>1</sup>	
	3.30 .130	II	650947-5						
			536405-5 <sup>1</sup>						
			536742-5 <sup>2</sup>						
	4.57 .180	II	93.98 3.700	88.90 3.500	78.74 3.100	85.29 3.358	3.00 .118	III	148116-5
									148539-5 <sup>2</sup>
									650945-5
536356-5 <sup>1</sup>									
536011-5 <sup>2</sup>									
1-1393644-7									
64	A,C	93.98 3.700	88.90 3.500	78.74 3.100	85.29 3.358	3.00 .118	II	650945-5	
								536356-5 <sup>1</sup>	
								536011-5 <sup>2</sup>	
						3.30 .130	II	1-1393644-7	
								9-1393644-4	
								4-1393646-7	
8-1393644-5									
650951-5									
536406-5 <sup>1</sup>									

<sup>1</sup> With Boardlocks      <sup>2</sup> High Temperature Housing  
**Note:** Select load and MFBL available upon request, contact Product Engineering.

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number	
		A	B	C	D				
48	A,B,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	2.64 .104	II	650478-5	
								650916-5 <sup>1</sup>	
								148020-5 <sup>1,2</sup>	
						3.00 .118	I	1393644-9	
								8-1393644-0	
								7-1393644-4 <sup>1</sup>	
	3.30 .130	II	650948-5						
			536407-5 <sup>1</sup>						
			650946-5						
	32	A,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	2.64 .104	II	650978-5 <sup>1</sup>
									650946-5
									8-1393644-1
3.00 .118							II	7-1393644-5 <sup>1</sup>	
								8-1393644-1	
								7-1393644-5 <sup>1</sup>	

<sup>1</sup> With Boardlocks      <sup>2</sup> High Temperature Housing  
**Note:** Select load and MFBL available upon request, contact Product Engineering.

**Type C Right Angle Pin Assemblies with Solder Posts (with and without Boardlocks)**

(Continued)

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
30	A,B,C	<b>38.12</b>	<b>33.02</b>	<b>22.86</b>	<b>33.12</b>	<b>3.00</b> .118	II	6-1393644-9
		1.501	1.300	.900	1.304			7-1393644-11
20	A,C	<b>38.12</b>	<b>33.02</b>	<b>22.86</b>	<b>33.12</b>	<b>3.00</b> .118	II	7-1393644-0
		1.501	1.300	.900	1.304			7-1393644-21

<sup>1</sup> With Boardlocks

**Note:** Select load and MFBL available upon request, contact Product Engineering.

**Expanded Size**

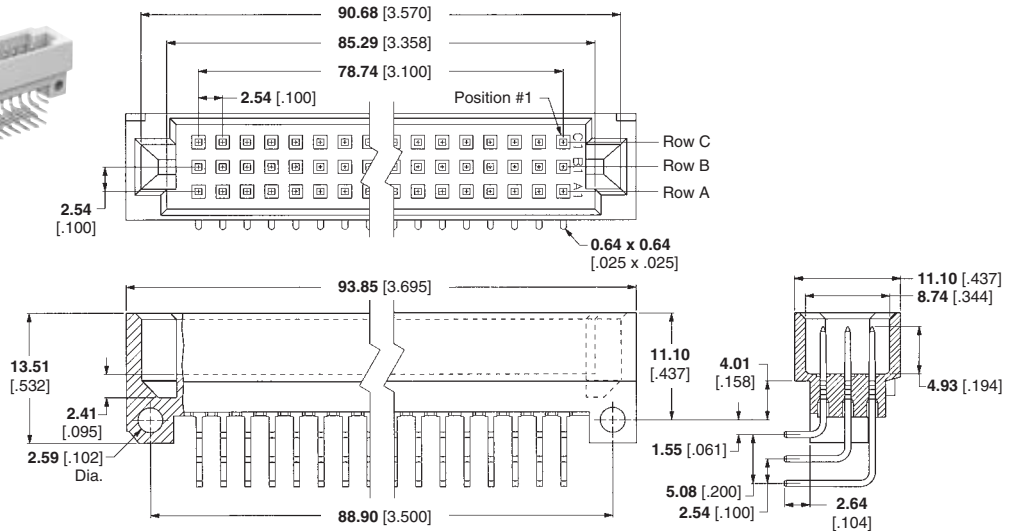
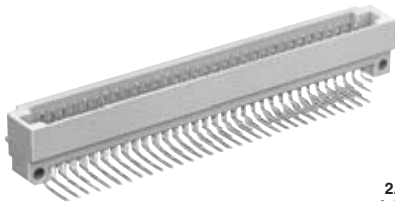
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
120	A,B,C	<b>114.30</b>	<b>109.22</b>	<b>99.06</b>	<b>105.61</b>	<b>2.64</b> .104	II	650906-5
		4.500	4.300	3.900	4.158			650914-5 <sup>1</sup>
		<b>3.30</b> .130	II	650949-5				
150	A,B,C	<b>139.70</b>	<b>134.62</b>	<b>124.46</b>	<b>130.01</b>	<b>2.64</b> .104	II	650907-5
		5.500	5.300	4.900	5.158			650915-5 <sup>1</sup>

<sup>1</sup> With Boardlocks

**Note:** Select load and MFBL available upon request, contact Product Engineering.

Type C Assemblies

**Type C Right Angle Pin Assemblies with Solder Posts and Guides**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Page 22

**PC Board Hole Layout** — Page 59

**Accessories** — Page 64

**Technical Documents** — Page 74:

DIN Specification 41612

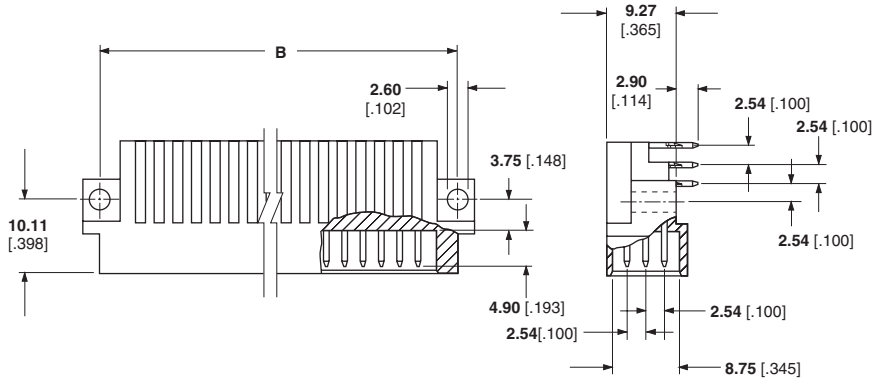
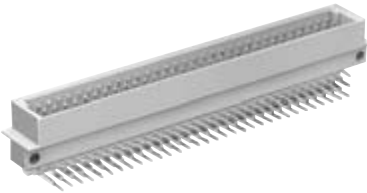
IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6784

Number of Positions	Rows Loaded	DIN Level	Part Number
96	A,B,C	II	148003-5

**Type C Right Angle Pin Assemblies with ACTION PIN Posts for PC Board Mount (0.64 [.025] Square)**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**MFBL Capability** — Pages 12, 13

**Mateable Connectors** — Pages 20, 21, 23, 24, 29-31, 55

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 64, 67, 68

**ACTION PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

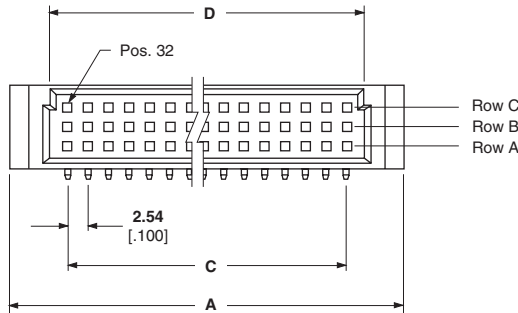
**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6927



**Standard Size (for 1.57 [.062] Min. PC Board Thickness)**

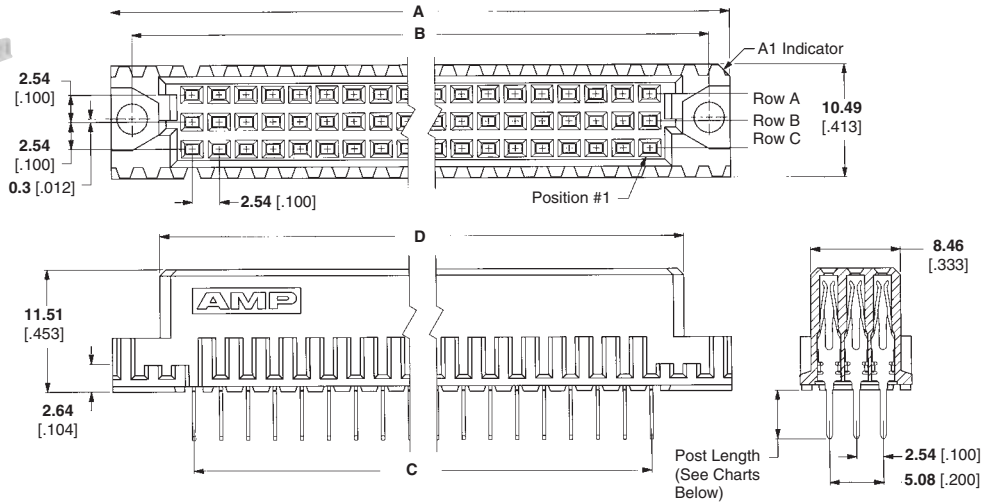
Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
96	A,B,C	93.70 3.689	88.90 3.500	78.74 3.100	85.29 3.358	II	215605-4

**Half Size (for 1.57 [.062] Min. PC Board Thickness)**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
48	A,B,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	II	216398-4
32	A,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	II	106276-4

Connectors on this page are toolless (flat rock).

**Type C Vertical Receptacle Assemblies with Solder Posts for PC Board Mount**



**Material**

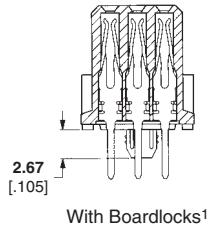
**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- Common Bus Systems Application** — Page 4
- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 17, 18, 19, 28, 52-54
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 64, 67, 68
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	93.98 3.700	90.00 3.543	78.74 3.100	85.00 3.346	2.49 .098	II	535089-5
						2.90 .114		9-1393640-2
						3.30 .130	II	535090-5
								535090-4
							650963-5 <sup>1</sup>	
							650963-4 <sup>1</sup>	
							III	535090-9
							3.70 .145	II
						4.50 .177	I	2-1393640-4
							I	2-1393640-3 <sup>1</sup>
							II	2-1393641-7 <sup>1</sup>
						4.57 .180	II	3-1393641-1
III	6-1393642-8							
III	535043-4							
13.00 .512	II	535043-5						
	II	536412-4 <sup>1</sup>						
2.49 .098	I	6-1393640-0						
	I	1-1393642-1						
2.90 .114	II	650458-5						
		536481-5 <sup>1</sup>						
		1-1393640-0						
		9-1393640-3						
3.30 .130	II	9-1393640-0 <sup>1</sup>						
		9-1393642-7 <sup>2</sup>						
		650956-5						
		650983-5 <sup>1</sup>						
4.50 .177	II	I	2-1393640-5					
		I	3-1393641-5					
	III	I	2-1393641-8 <sup>1</sup>					
		I	6-1393642-9					
	4.57 .180	II	I	6-1393642-7 <sup>1</sup>				
			I	650408-5				
13.00 .512	II	I	650408-4					
		I	1-1393642-6					



<sup>1</sup> With Boardlocks  
<sup>2</sup> Flux tight  
**Note:** Select load available upon request, contact Product Engineering.

Type C Assemblies

**Type C Vertical Receptacle Assemblies with Solder Posts for PC Board Mount**

(Continued)

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number						
		A	B	C	D									
48	A,B,C	53.34 2.100	49.37 1.944	38.10 1.500	44.35 1.746	2.49 .098	II	535091-5 536397-5 <sup>1</sup>						
						2.90 .114	I	1393640-7						
							II	8-1393640-5 8-1393640-2 <sup>1</sup> 9-1393642-3 <sup>2</sup>						
						3.30 .130	II	535070-5 535070-4						
								536484-5 <sup>1</sup>						
						4.50 .177	II	2-1393640-1						
								2-1393641-5 2-1393641-3 <sup>1</sup>						
						4.57 .180	II	535071-5						
								535071-4 536485-5 <sup>1</sup>						
						13.00 .512	II	1393642-9						
						32	A,C	53.34 2.100	49.37 1.944	38.10 1.500	44.35 1.746	2.49 .098	II	650459-5
												2.90 .114	II	8-1393640-6
4.50 .177	II	2-1393641-6 2-1393641-4 <sup>1</sup>												
		650466-4												
4.57 .180	II	650466-5												

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number	
		A	B	C	D				
30	A,B,C	39.76 1.565	34.76 1.368	22.86 .900	29.12 1.146	2.90 .114	II	9-1393642-1 <sup>1,2</sup>	
						4.50 .177	II	2-1393641-0 2-1393641-2 <sup>1</sup>	
								8-1393640-2 <sup>1</sup>	
20	A,C	39.76 1.565	34.76 1.368	22.86 .900	29.12 1.146	2.90 .114	II	8-1393640-2 <sup>1</sup>	
						4.50 .177	I	2-1393640-0	

**Expanded Size**

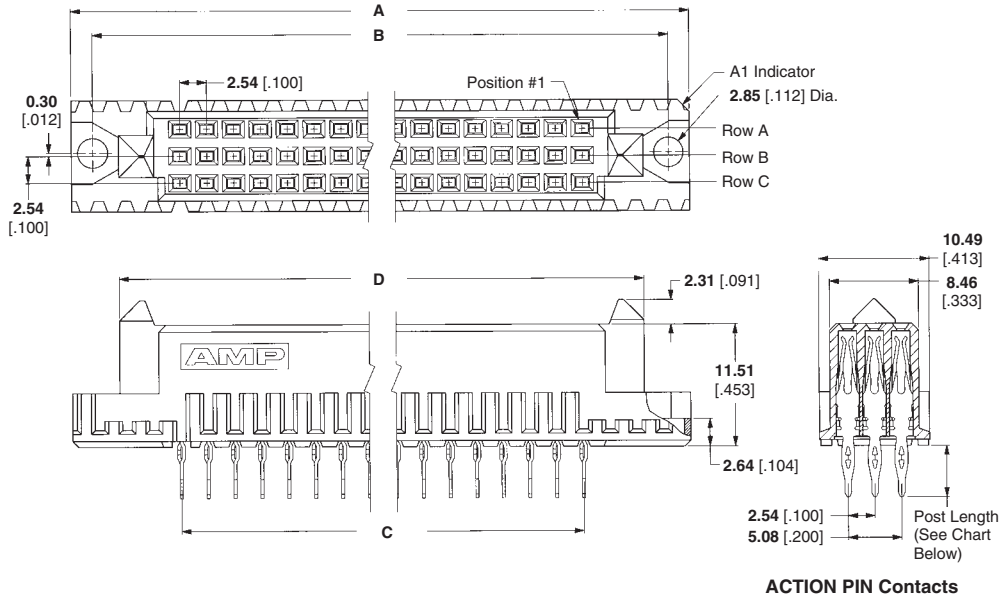
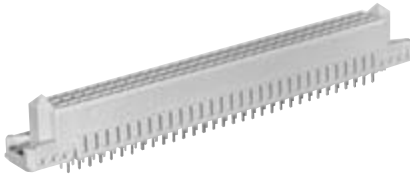
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number	
		A	B	C	D				
120	A,B,C	114.30 4.500	110.31 4.343	99.06 3.900	105.31 4.146	2.49 .098	II	535097-5 536489-5 <sup>1</sup>	
						3.30 .130	II	535098-5 535098-4 536494-5 <sup>1</sup>	
								650404-5	
150	A,B,C	139.70 5.500	135.71 5.343	124.46 4.900	130.71 5.146	2.49 .098	II	650404-5	
						3.30 .130	II	650405-5	
								4.57 .180	II

<sup>1</sup> With Boardlocks

<sup>2</sup> Flux tight

**Note:** Select load available upon request, contact Product Engineering.

**Type C Vertical Receptacle Assemblies with Solder Posts, ACTION PIN Posts (0.30 x 0.61 [.012 x .024]) and Guides**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 18
- PC Board Hole Layout** — Page 59
- Accessories** — Pages 64, 67, 68
- ACTION PIN Contacts** — Pages 70, 71
- Application Tooling** — Pages 72, 73
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size (for PC Board Thicknesses 1.57 [.062] and Above)**

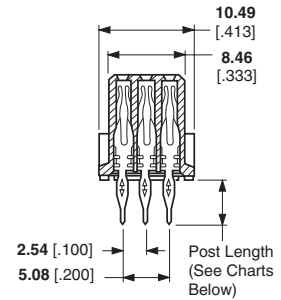
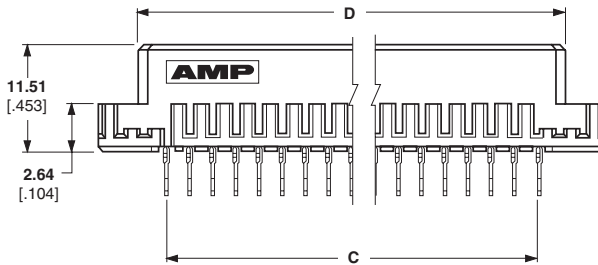
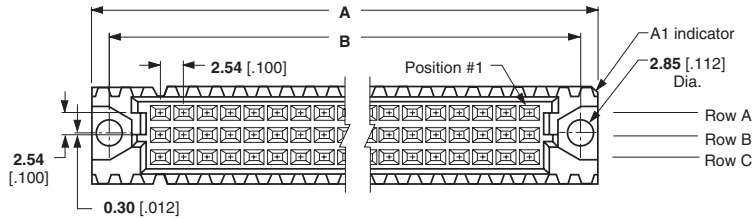
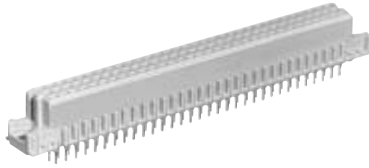
Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number	
		A	B	C	D		Solder Posts 3.30 [.130] Post Length	ACTION PIN Posts 4.83 [.190] Post Length
96	A,B,C	99.06 3.900	95.07 3.743	78.74 3.100	90.27 3.554	II	650998-5	148001-5 536398-51

<sup>1</sup> Reverse Polarized Housing

**Connectors on this page are toolless (flat rock).**

Type C Assemblies

**Type C Vertical Receptacle Assemblies with ACTION PIN Posts for PC Board Mount (0.30 x 0.61 [.012 x .024])**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 7
- Mateable Connectors** — Pages 17, 18, 19, 28, 52-54
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 64, 68, 69
- ACTION PIN Contacts** — Pages 70, 71

- Application Tooling** — Pages 72, 73
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6927

**Standard Size (For PC Board Thicknesses of 1.57 [.062] and Above)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	93.98	90.00	78.74	85.00	3.70	II	4-1393637-6
		3.700	3.543	3.100	3.346	.146		535032-5
		4.83	535032-4					
			535056-5 <sup>1</sup>					
			535032-9					
64	A,C	93.98	90.00	78.74	85.00	6.00	I	1-1393638-2
		3.700	3.543	3.100	3.346	.236		1393637-9
		4.83	4-1393637-9					
			535059-5					
			535059-4					

**Half Size (For PC Board Thicknesses of 1.57 [.062] and Above)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
48	A,B,C	54.34	49.37	38.10	44.35	3.70	II	4-1393637-4
		2.100	1.944	1.500	1.746	.146		535034-5
		4.83	535034-4					
32	A,C	54.34	49.37	38.10	44.35	4.83	II	535068-5
		2.100	1.944	1.500	1.746	.190		

**Expanded Size (For PC Board Thicknesses of 1.57 [.062] and Above)**

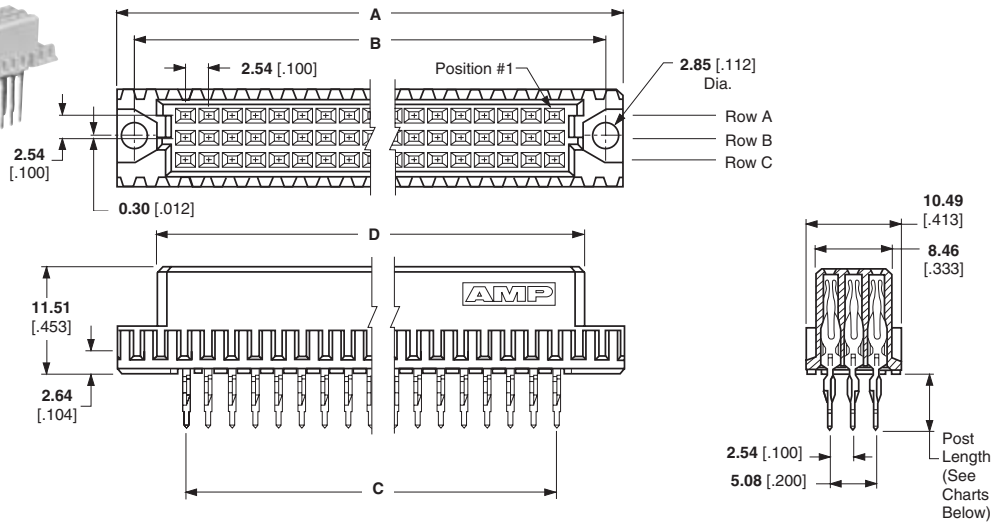
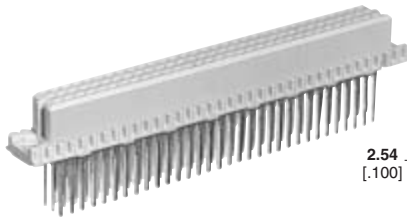
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
120	A,B,C	114.30	110.31	99.06	105.31	4.83	II	535079-5
150	A,B,C	139.70	135.71	124.46	130.71	4.83		535080-5
		4.500	4.343	3.900	4.146	.190		
		5.500	5.343	4.900	5.146	.190		

<sup>1</sup> Without mounting ears.

**Connectors on this page are toolless (flat rock).**

When connectors are installed using an SM-3 Machine, a spacer of 26.67 [1.050] is needed to make up height difference.

**Type C Vertical Receptacle Assemblies with ACTION PIN Posts for PC Board Mount (0.64 [.025] Square)**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6  
**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 17, 19, 28, 52-54

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 63, 64, 68, 69

**ACTION PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

**Technical Documents** — Page 74:

DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheets 408-6927, 408-9623

**Standard Size (For PC Board Thicknesses of 2.36 [.093] and Above)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	95.00	90.00	78.74	85.00	13.00	II	215912-4 <sup>3</sup>
		3.740	3.543	3.100	3.346	.512		1-215912-4 <sup>1</sup>
						17.00	II	215614-4 <sup>3</sup>
						.669		1-215614-4 <sup>1</sup>
64	A,C	95.00	90.00	78.74	85.00	13.00	II	215913-4 <sup>3</sup>
		3.740	3.543	3.100	3.346	.512		1-215913-4 <sup>1</sup>
						17.00	II	215781-4 <sup>3</sup>
						.669		1-215781-4 <sup>1</sup>

**Standard Size (For PC Board Thicknesses of 1.57 [.062] and Above)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	95.00	90.00	78.74	85.00	13.00	II	215950-4 <sup>3</sup>
		3.740	3.543	3.100	3.346	.512		1-215950-4 <sup>1</sup>
						17.00	II	148057-52, <sup>3</sup>
						.669		1-148057-51, <sup>2</sup>
64	A,C	95.00	90.00	78.74	85.00	13.00	II	148059-5 <sup>3</sup>
		3.740	3.543	3.100	3.346	.512		1-148059-51, <sup>2</sup>

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
48	A,B,C	53.34	49.37	38.10	44.35	3.70	II	4-1393637-42, <sup>3</sup>
		2.100	1.944	1.500	1.746	.146		

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
30	A,B,C	39.76	34.76	22.86	29.12	3.70	II	4-1393637-02, <sup>3</sup>
		1.565	1.368	.900	1.146	.146		
20	A,C	39.76	34.76	22.86	29.12	3.70	II	4-1393637-22, <sup>3</sup>
		1.565	1.368	.900	1.146	.146		

<sup>1</sup> Precious metal plating in contact area and 5.08 [.200] from tip of post.

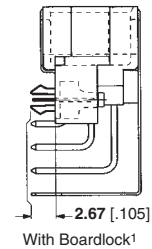
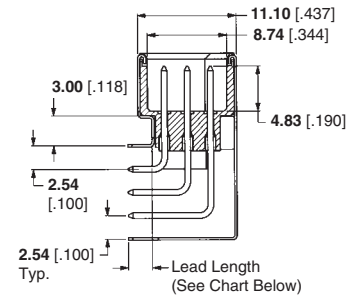
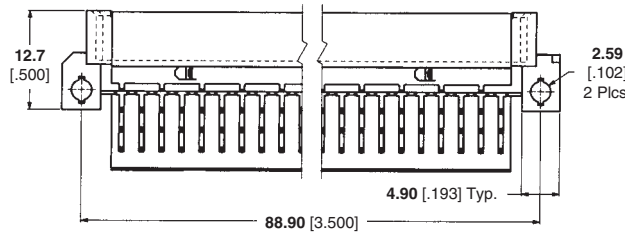
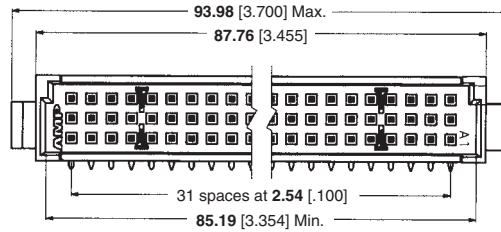
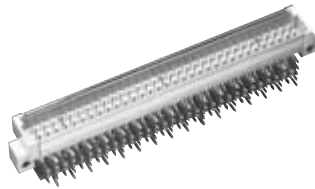
<sup>2</sup> Toolless (flat rock) connectors.

<sup>3</sup> Precious metal plating in contact area, tin lead on tails.

**Note:** Seating tool required, unless specified otherwise.



**Enhanced Type C Right Angle Pin Assemblies with Solder Leads**



**Material**

**Housing** — Glass filled polymer

**Shield** — Copper alloy

**Pin Contacts** — Copper alloy

**Related Product Data**

**Electrical/Mechanical Data** — Page 11

**Mateable Connector** — Page 26

**PC Board Hole Layout** — Page 59

**Technical Document** — DIN Specification 41612

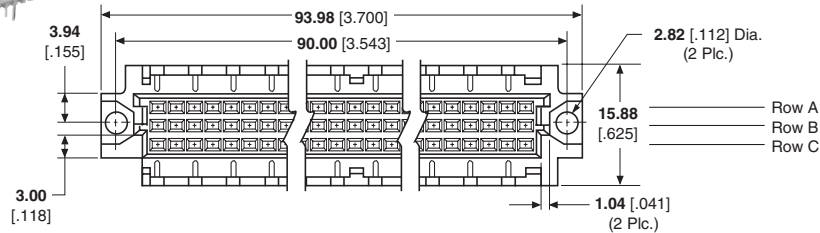
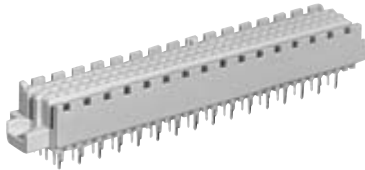
Type C Assemblies

**Standard Size**

Number of Positions	Rows Loaded	Ground Plates	DIN Levels	Part Number	
				2.64 [.104] Lead Length	3.30 [.130] Lead Length
96	A,B,C	Upper and Lower	II	650987-5	536146-5
				536148-5 <sup>1</sup>	536149-5 <sup>1</sup>

<sup>1</sup> With Boardlocks

**Enhanced Type C Vertical Receptacle Assemblies with Solder Leads and ACTION PIN Leads**

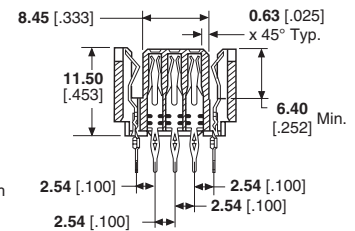
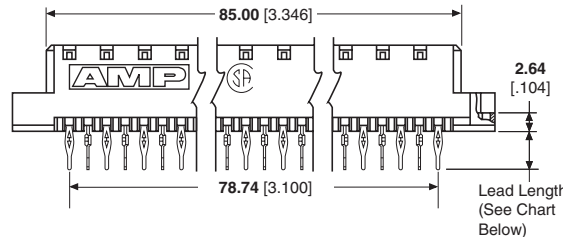


**Material**

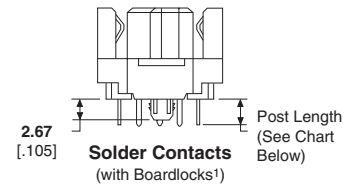
- Housing** — Glass filled polymer
- Receptacle Contacts** — Copper alloy
- Ground Contacts** — Copper alloy

**Related Product Data**

- Electrical/Mechanical Data** — Page 11
- Mateable Connector** — Page 25
- PC Board Hole Layout** — Page 59
- ACTION PIN Contacts** — Pages 70, 71



**ACTION PIN Contacts**



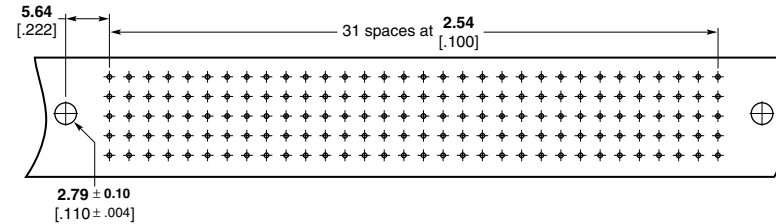
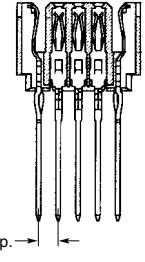
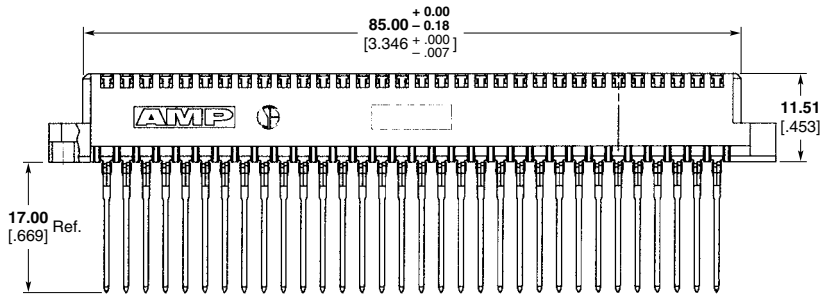
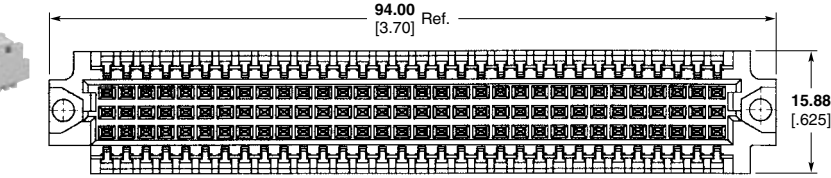
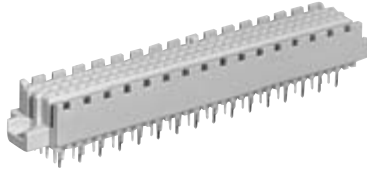
**Standard Size (for 1.57 [.062] Min. PC Board Thickness)**

Number of Positions	Rows Loaded	DIN Levels	Solder Contacts		ACTION PIN Contacts*
			3.30 [.130] Lead Length	4.57 [.180] Lead Length	4.83 [.190] Lead Length
96	A,B,C	II	536152-5	536153-5	650992-5
			536154-5 <sup>1</sup>	536155-5 <sup>1</sup>	—

<sup>1</sup> With Boardlocks

\* Connectors with ACTION PIN contacts on this page are toolless (flat rock).

**Enhanced Type C Vertical Receptacle Assemblies  
VME64X ACTION PIN Contacts**



**Material**

**Housing** — Glass filled polymer  
**Receptacle Contacts** — Copper alloy  
**Ground Contacts** — Copper alloy

**Related Product Data**

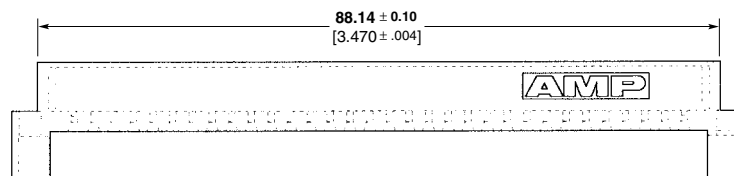
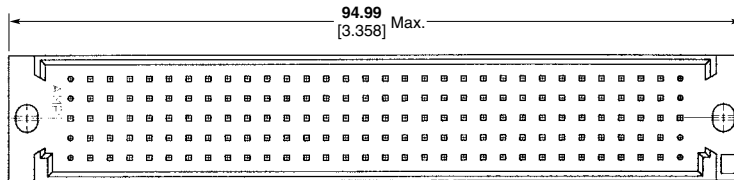
**Electrical/Mechanical Data** — Page 11  
**PC Board Hole Layout** — Page 59

Type C Assemblies

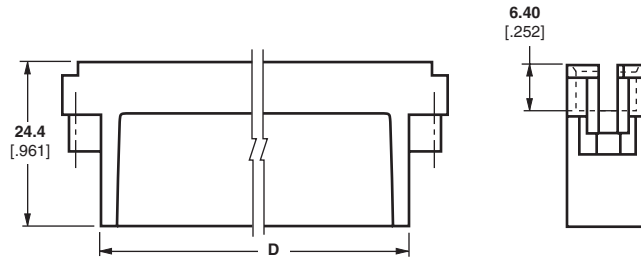
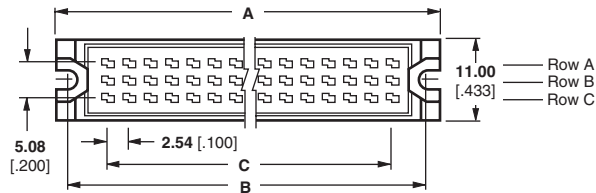
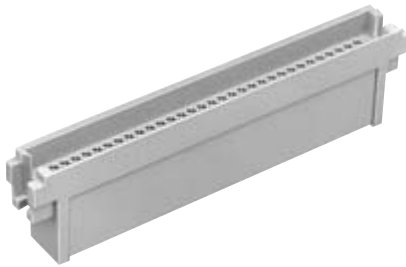
Number of Positions	Rows Loaded	DIN Levels	ACTION PIN Contacts	
			6.00 [.236] Lead Length	17.00 [.669] Lead Length
160	A,B,C	II	148452-5	1-148445-5

**Shroud**

PCB Thickness	Part Number
0.125 .005	148527-1



**Type C Vertical Pin Housing for Crimp Snap-In Pin Contacts**



**Material**

**Housing** — Glass filled polymer

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 20, 21, 23, 24, 29-31, 55, 56

**Accessories** — Pages 64, 66

**Application Tooling** — See below

**Technical Documents** — Page 74:

DIN Specification 41612  
IEC Specification 60603-2

**Standard Size**

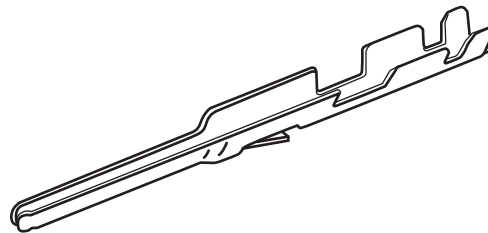
Number of Positions	Dimensions				Part Number
	A	B	C	D	
96	93.70 3.689	90.00 3.543	78.74 3.100	83.00 3.268	166467-1

Type C Assemblies

**AMPMODU Mod. IV  
Crimp Snap-In  
Pin Contacts**

**Material**

**Contacts** — Copper alloy



**Hand Tool**

**Part Number 91517-1**

**Instruction Sheet 408-8547**

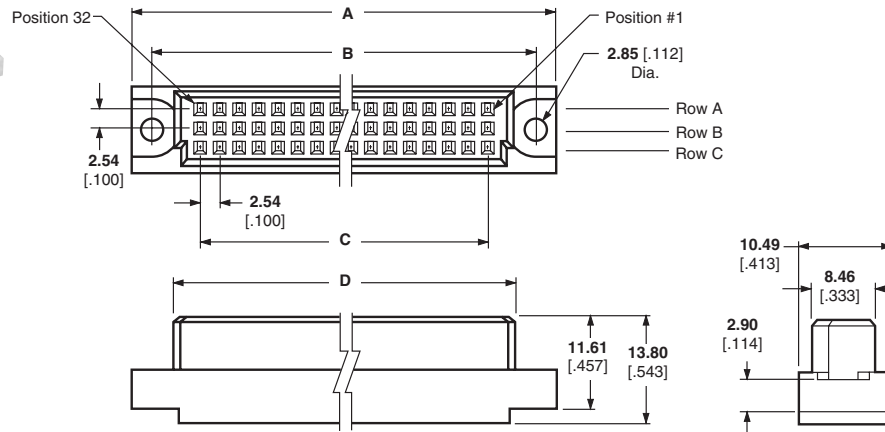
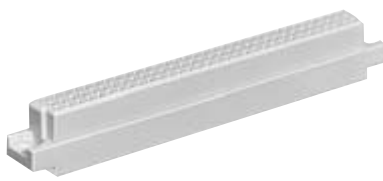
**Extraction Tool**

**Part Number 166645-1**

Wire Size Range		Insulation Diameter (Max.)	DIN Levels	Part Number	
mm <sup>2</sup>	AWG			Strip Form*	Loose Piece
0.12 - 0.4	26-22	1.60 [.063]	II	102095-3	166679-1 102107-2
			III	102095-2	166679-4 102107-1

\* Strip form, 12,000 pieces per reel. For automatic tooling recommendation, consult Tyco Electronics at the numbers listed below.

**Type C Vertical Receptacle Housing for Crimp Snap-In Receptacle Contacts**



**Material**

**Housing** — Glass filled polymer

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 17, 19, 28, 52, 54

**Accessories** — Pages 64, 66

**Application Tooling** — See below

**Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2

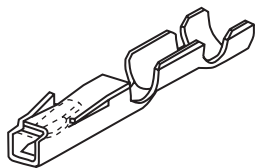
**Standard Size**

Number of Positions	Dimensions				Part Number
	A	B	C	D	
96	95.00	90.00	78.74	85.00	925486-1
	3.740	3.540	3.100	3.346	827803-1

**Half Size**

Number of Positions	Dimensions				Part Number
	A	B	C	D	
48	54.40	49.50	38.10	44.20	926040-2
	2.142	1.949	1.500	1.740	

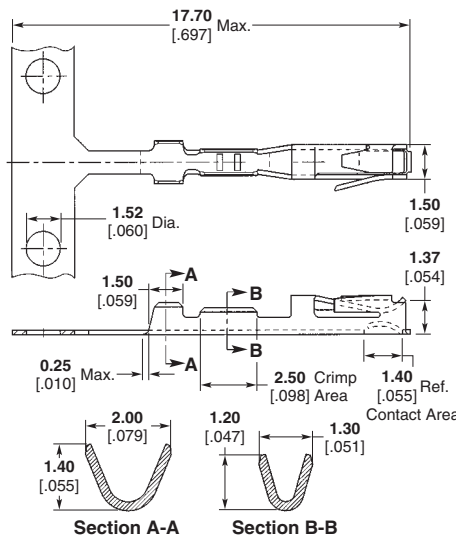
**Tandem Spring Crimp Snap-In Receptacle Contacts**



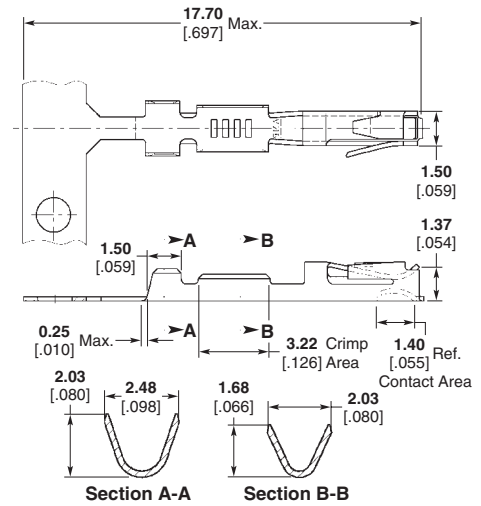
**Material**

**Contacts** — Copper alloy

Tandem Spring Contacts can be loaded in the above housing to mate with Type C pin connectors loaded in any pattern desired. They also mate with 0.64 [.025] square posts and can be used on the back of connectors with wrap-type tails.



Part Number 167041



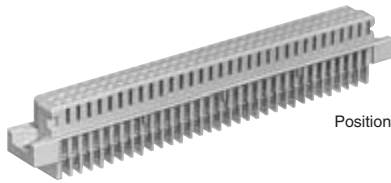
Part Number 166500

Wire Size Range mm <sup>2</sup>	AWG	Insulation Diameter	DIN Levels	Part Number	
				Strip Form*	Loose Piece
0.032 - 0.09	32-28	0.50-1.02 .020-.040	II	167041-2	167042-1
0.12 - 0.56	24-20	0.91-1.40 .036-.055	II	166500-2	166722-1

\* Strip form, 50,000 pieces per reel. For automatic tooling recommendation, consult Tyco Electronics at the numbers listed below.

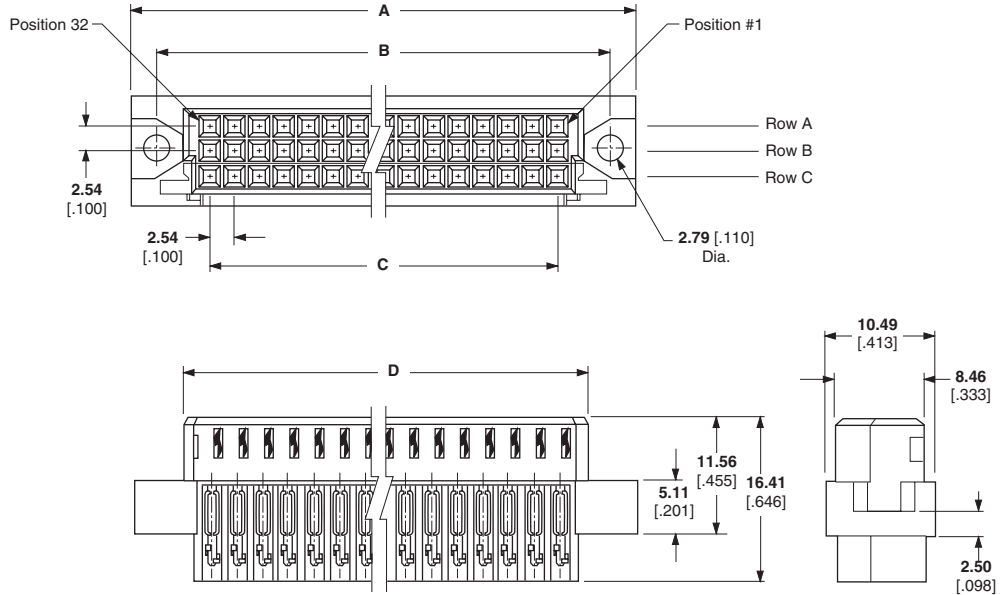
**Type C Vertical Receptacle Assemblies IDC Discrete Wire Connectors**

Type C Assemblies



**Product Facts**

- Two part receptacle housing; up to 96 positions possible
- Replacement receptacle contacts, insulation displacement contacts for solid wire or 7-strand wire with redundant slots and additional insulation support
- Wire size range 0.05 to 0.35 mm<sup>2</sup>
- The Tyco Electronics standard contact cavity allows use of crimp contact up to 0.56 mm<sup>2</sup>
- Fits in cover Part Number 826196-1 or Part Number 828545-1
- Optimum application tooling



**Material**

**Housing** — Glass filled polymer

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 17, 19, 28, 52, 54

**Accessories** — Pages 64, 66

**Application Tooling** — See right

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

No. of Positions	Wire Size Range		Insulation Diameter	Rows Loaded	Dimensions				DIN Level	Part Number (See Note)
	mm <sup>2</sup>	AWG			A	B	C	D		
96	0.05-0.15	30-26	1.20	A,B,C	94.90	90.00	78.74	85.00	II	167259-2
			.047		3.736	3.543	3.100	3.346		167259-5
	0.12-0.4	26-22							II	166873-2
										166873-5
64	0.05-0.15	30-26	1.20	A,C	94.90	90.00	78.74	85.00	II	167257-2
			.047		3.736	3.543	3.100	3.346		167257-5
	0.12-0.4	26-22							II	166811-2
										166811-5
32	0.05-0.15	30-26	1.20	A,C (Even Positions)	94.90	90.00	78.74	85.00	II	167255-2
			.047		3.736	3.543	3.100	3.346		167255-5
	0.12-0.4	26-22							II	166870-2
										166870-5

**Note:** Suffix -2 For Type R mating connectors; -5 For Type C mating connectors

**Tooling: Hand Tool Kit Number 658164-2**

Kit consists of:

- Hand Tool ..... 658096-3
- Table Clamp ..... 870089-1
- Cable Clamp ..... 658166-1
- Service Tool ..... 658167-1
- Replacement Contacts (100) ..... 827788-1
- Plastic Case ..... 658169-1

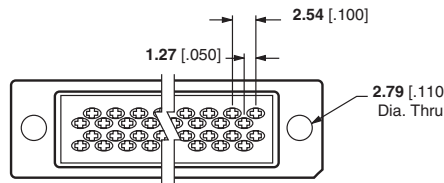
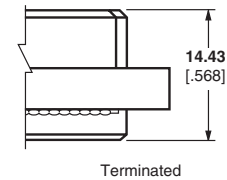
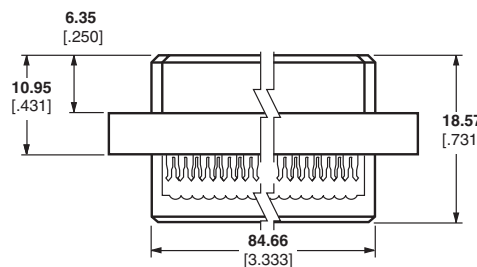
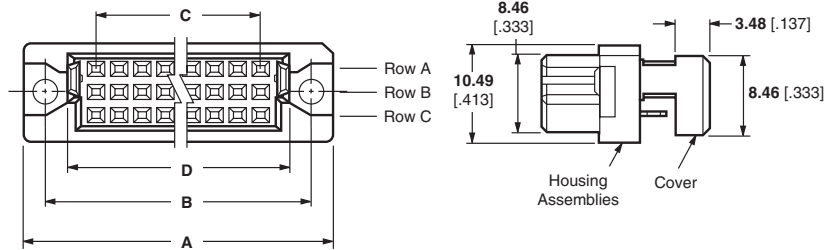
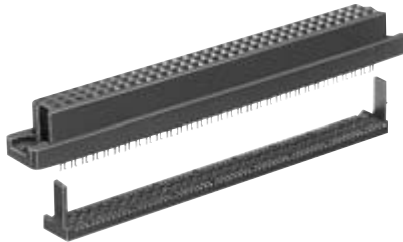
For automatic tooling recommendations, call Technical Support at the numbers listed below.

A hand tool simultaneously cuts to length and inserts the individual wires into the connector.

The redundant insulation displacement slots with additional insulation support provide a reliable contact. Service tooling is also available.

**Type C Receptacle Assemblies EUROLATCH Ribbon Cable Connectors, Inverse Style**

**Receptacle Assemblies with Cover (Preassembled)**



**Material**

**Housing** — Glass filled polymer

**Cable Specifications**

- 64 conductor
- 0.05mm<sup>2</sup> [30 AWG] solid
- 0.08-0.09mm<sup>2</sup> [28 AWG] solid or stranded
- 0.12-0.15mm<sup>2</sup> [26 AWG] solid or stranded
- Thickness, 0.89 ± 0.08 [.035 ± .003]
- Conductor centerline, 1.27 [.050]

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Pages 17, 19, 28, 52, 54

**Accessories** — Page 64

**Application Tooling** — See below

**Technical Documents** — Page 74:

- DIN Specification 41612
- IEC Specification 60603-2
- Instruction Sheets 408-6732, 408-7777, 408-9828, 408-9840

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Part Number
		A	B	C	D	
64	A, C	94.74 3.730	89.92 3.540	78.74 3.100	85.09 3.350	746603-1 1489041-1

**Note:** For more information on EUROLATCH Connectors, Planar Ribbon Cable and Tooling, request AMP-LATCH Ribbon Cable Connector System Catalog 82012.

**Tooling:**

- Hand Tool Kit.....768340-1 (Ref. 408-9828)
- Connector-Specific Kit .....768352-1 (Ref. 408-9840)
- Pneumatic Tool .....91112-3 (Ref. 408-6732)
- Manual Tool.....91085-2 (Ref. 408-7777)

**Four-Row Right Angle Pin Assemblies with Solder Posts**

**4x32 (128) Positions**

**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

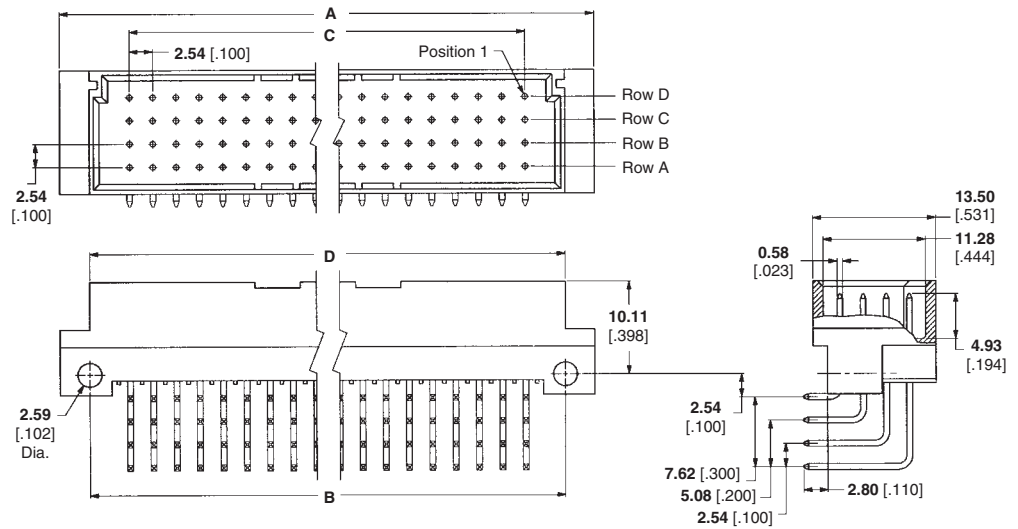
**Performance Specifications** —  
Page 7

**Mateable Connectors** — Page 33

**PC Board Hole Layout** — Page 60

**Technical Documents** — Page 74:

DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

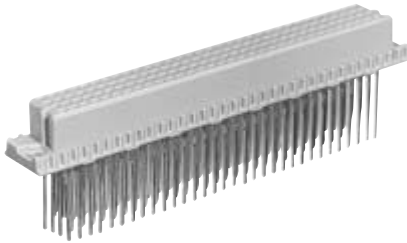


Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
128	A,B,C,D	93.90 3.697	88.90 3.500	78.74 3.100	87.50 3.445	II	106739-4



**Four-Row Vertical Receptacle Assemblies with ACTION PIN Posts for PC Board Mount (0.64 [.025] Square)**

4x32 (128) Positions



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Page 32

**PC Board Hole Layout** — Page 60

**ACTION PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

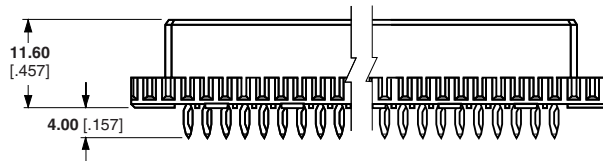
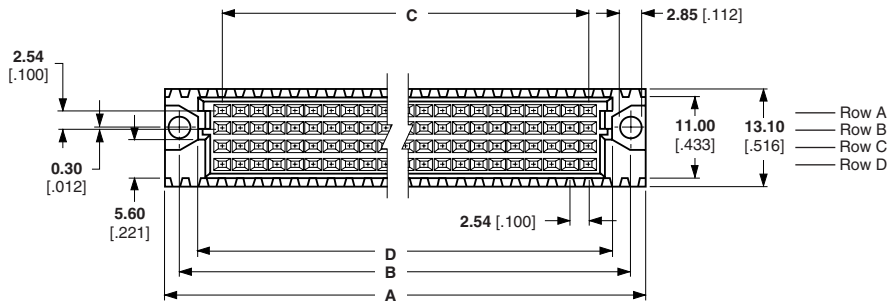
**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6927



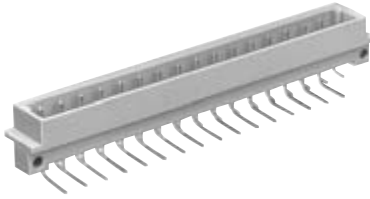
**Standard Size (for 1.57 [.062] Min. PC Board Thickness)**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
128	A,B,C,D	95.00 3.740	90.00 3.543	78.74 3.100	84.90 3.343	4.00 .157	II	216415-4

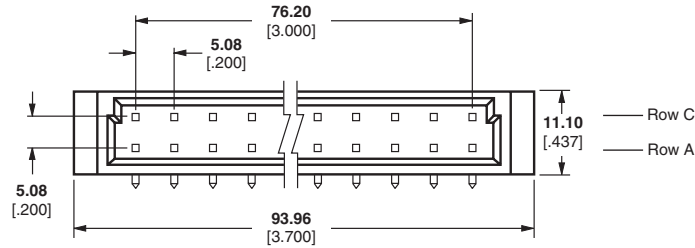
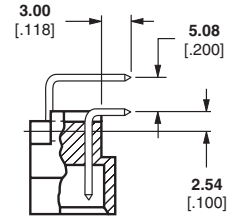
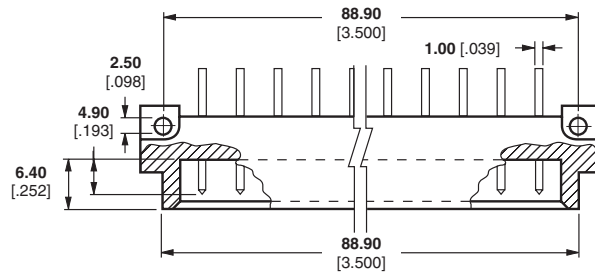
<sup>1</sup> Precious metal plating in contact area and for 5.08 [.200] from tip of post; gold flash on remainder of post.

\* Seating tools required for connectors on this page.

**Type D Right Angle Pin Assemblies with Solder Posts**



Solder posts suitable for holes 1.0 mm nominal diameter according to IEC Publication 326.



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**DIN II Plating**

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Page 35

**PC Board Hole Layout** — Page 60

**Accessories** — Pages 64, 68, 69

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

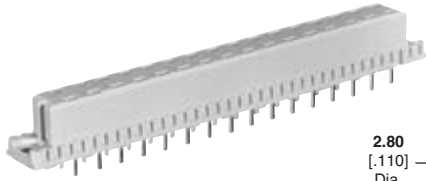
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	DIN Level	Part Number
32	A,C	II	9-1393644-8

Type D Assemblies

**Type D Vertical Receptacle Assemblies with Solder Posts for PC Board Mount**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 7

**Mateable Connectors** — Page 34

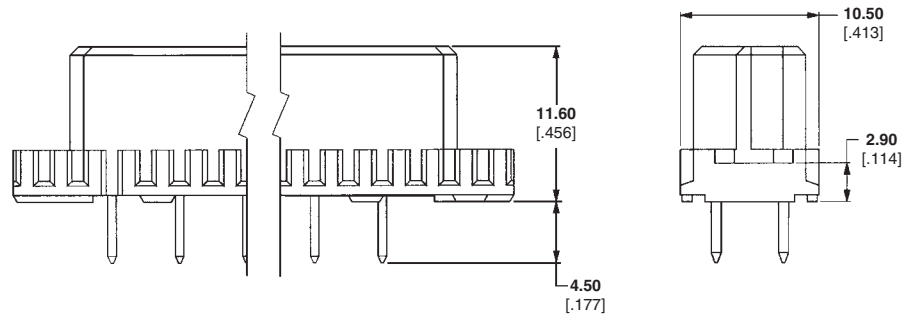
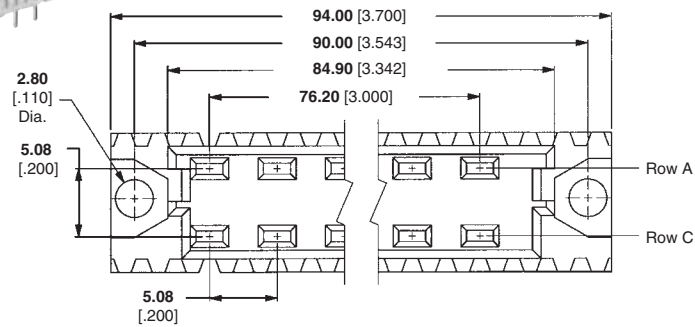
**PC Board Hole Layout** — Page 61

**Accessories** — Pages 67-69

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

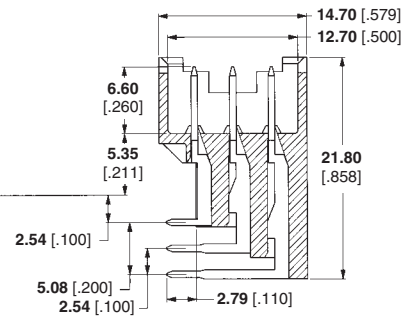
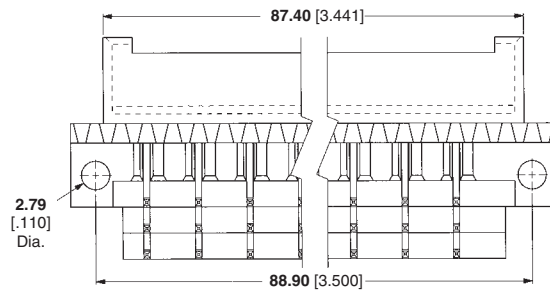
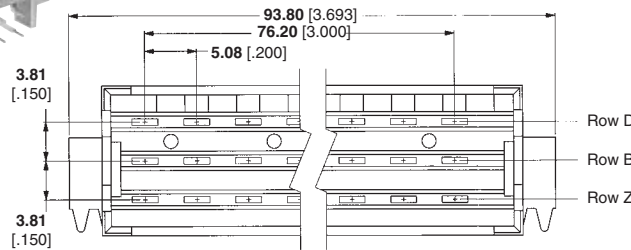
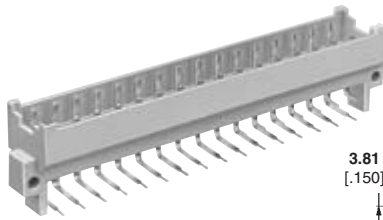


**Standard Size**

Number of Positions	Rows Loaded	DIN Level	Part Number
32	A,C	II	106779-4

Type D Assemblies

**Type F Right Angle Pin Assemblies with Solder Posts**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 8
- Mateable Connectors** — Pages 37, 38, 40
- PC Board Hole Layout** — Page 61
- Accessories** — Pages 67-69
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Instruction Sheet 408-6784

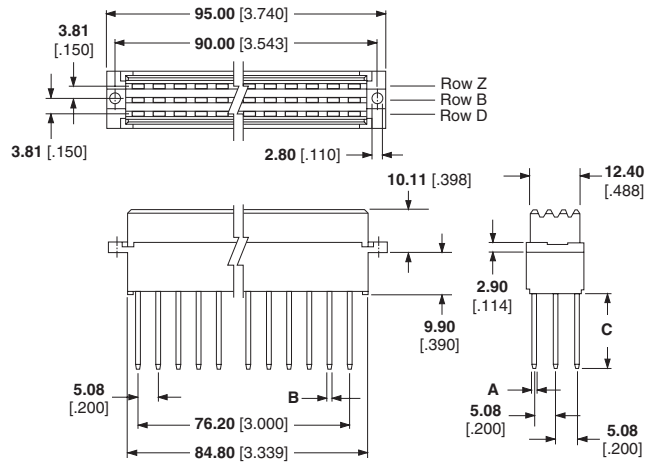
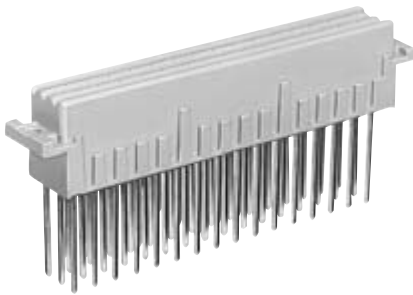
Type F Assemblies

**Standard Size**

Number of Positions	Rows Loaded	DIN Level	Part Number	
			—	MFBL*Z32
48	Z,B,D	II	2-164045-4	—
		III	2-164045-8	—
32	Z,B	III	—	188250-8
32	Z,D	II	2-164306-4	—

\* MFBL (Make First/Break Last)

**Type F Vertical Receptacle Assemblies with Wrap Type and Solder Posts**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 36, 39

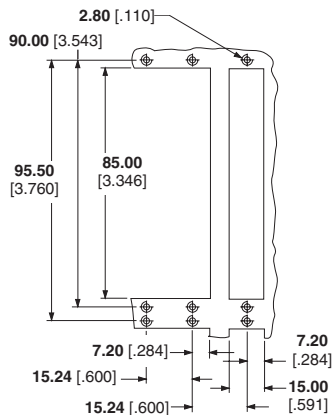
**PC Board Hole Layout** — Page 61

**Accessories** — Page 68, 69

**Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Instruction Sheet 408-6784

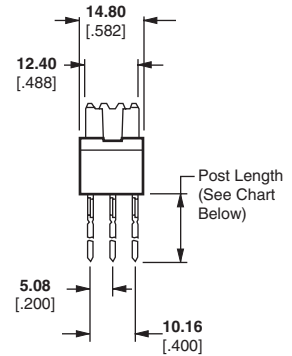
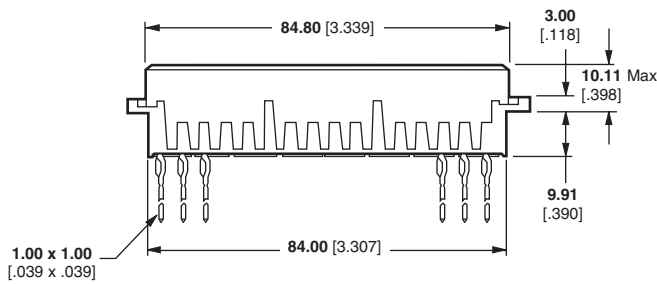
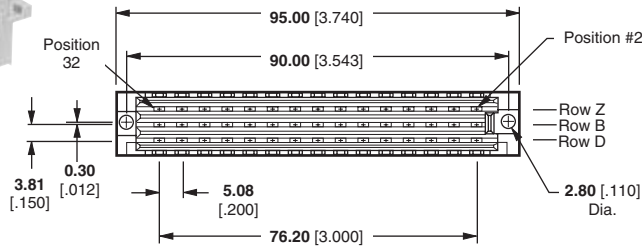
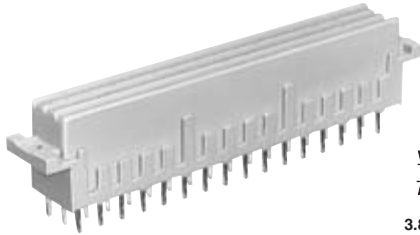
Number of Positions	Post Type	Rows Loaded	DIN Level	Part Number
48	Wrap Type 1.00 [.039] Square	Z,B,D	II	166717-4
	4.00 [.157] Solder	Z,B,D	II	166733-4
32	Wrap Type 1.00 [.039] Square	Z,D	II	166719-4
	4.00 [.157] Solder	Z,D	II	166951-4

**Recommended Panel Cutout**



Post Type	Post Dimensions		
	A	B	C
Wrap Type 1.00 [.039] Square	1.00 .039	1.00 .039	22.00 .866
4.00 [.157] Solder	0.60 .022	0.30 .012	4.00 .157

**Type F Vertical Receptacle Assemblies with ACTION PIN Posts  
(1.00 [.039] Square)**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 36, 39

**PC Board Hole Layout** — Page 61

**Accessories** — Page 68, 69

**ACTION PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Instruction Sheet 408-6927

Application Specification 114-19004

**Standard Size (for PC Board Thicknesses 2.36 [.093] and Above)**

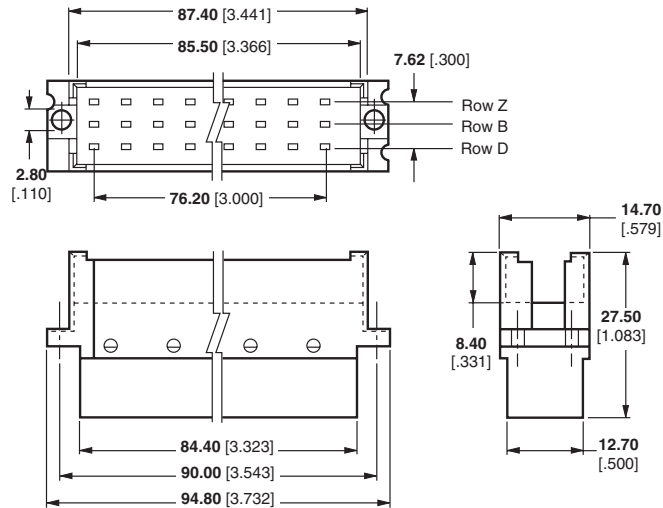
Number of Positions	Rows Loaded	DIN Level	Part Number	
			6.00 [.236] <sup>1</sup> Post Length	Wrap Type 22.00 [.866] Post Length
48	Z,B,D	II	166648-4	—
		III	2-166648-4 <sup>2</sup>	—
32	Z,B	II	166649-4	—
		III	166649-8	166594-8

<sup>1</sup> Pre-notched to break off at 6.00 [.236] from bottom of connector.

<sup>2</sup> Extended ends of posts already broken off (only for 2-166648-4).

**Connectors on this page are toolless (flat rock).**

**Type F Vertical Pin Housings for Crimp Snap-In Pin Contacts**



**Material**

**Housing** — Glass filled polymer

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 37, 38, 40

**Accessories** — Pages 66, 67

**Application Tooling** — See below

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Instruction Sheet 408-042-140

**Standard Size**

Number of Positions	Part Number
	166570-1
48	166570-8*
	1-166570-0*

\* Variable printing (see customer drawings)

**Crimp Snap-In Contacts**

**Material**

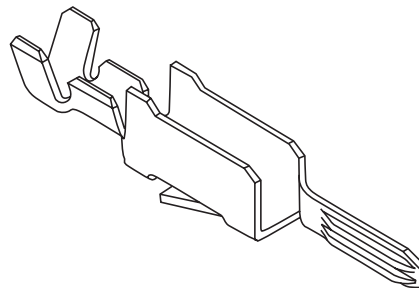
**Contacts** — Copper alloy

**Hand Tool**

**Part Number 169480-1**

**Extraction Tool**

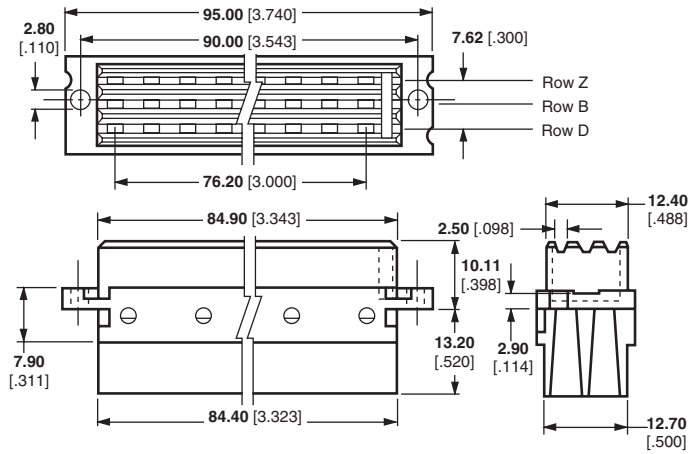
**Part Number 658033-1**



Wire Size Range		Insulation Diameter	DIN Level	Part Number	
mm <sup>2</sup>	AWG			Strip Form*	Loose Piece
0.05-0.15	30-26	0.30-0.70 .012-.028	II	166477-6	166634-4
			III	166477-7	166634-5
0.12-0.6	26-20	1.10-1.80 .043-.071	II	—	166635-4
0.8-1.4	18-16	2.00-2.50 .079-.098	II	166479-6	166636-4

\* Strip form, 5,000 pieces per reel. For automatic tooling recommendation; consult Tyco Electronics at the numbers listed below.

**Type F Vertical Receptacle Housings for Crimp Snap-In Receptacle Contacts**



**Material**

**Housing** — Glass filled polymer

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 36, 39

**Accessories** — Pages 66, 67

**Application Tooling** — See below

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Instruction Sheet 408-042-140

**Standard Size**

Number of Positions	Part Number
48	166569-1
	1-166569-0*

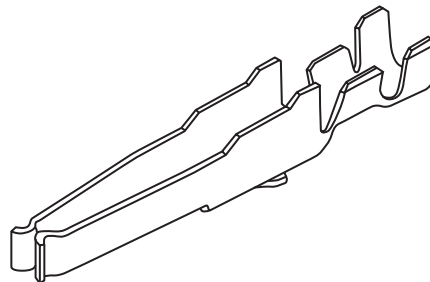
\* Variable printing, see customer drawings.

Type F Assemblies

**Crimp Snap-In Contacts**

**Material**

**Contacts** — Copper alloy



**Hand Tool**

**Part Number 169480-1**

**Extraction Tool**

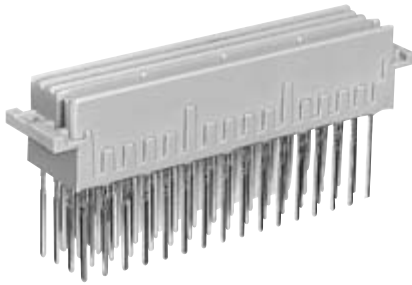
**Part Number 658033-1**

Wire Size Range		Insulation Diameter	DIN Levels	Part Number	
mm <sup>2</sup>	AWG			Strip Form*	Loose Piece
0.05-0.15	30-26	0.30-0.70 .012-.028	II	166459-3	—
0.12-0.6	26-20	1.10-1.80 .043-.071	II	166460-3	166632-2
0.8-1.4	18-16	2.00-2.50 .079-.098	II	166461-3	—
			III	166461-4	—

\* Strip form, 5,000 pieces per reel. For automatic tooling recommendation; consult Tyco Electronics at the numbers listed below.



**Type G Vertical Receptacle Assemblies with ACTION PIN Posts  
(1.00 [.039] Square)**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** —  
Page 8

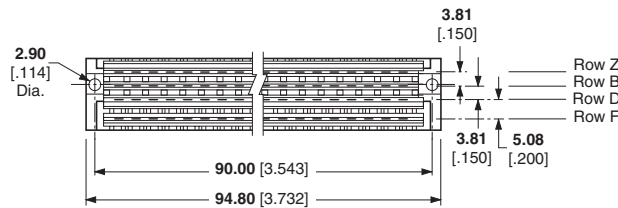
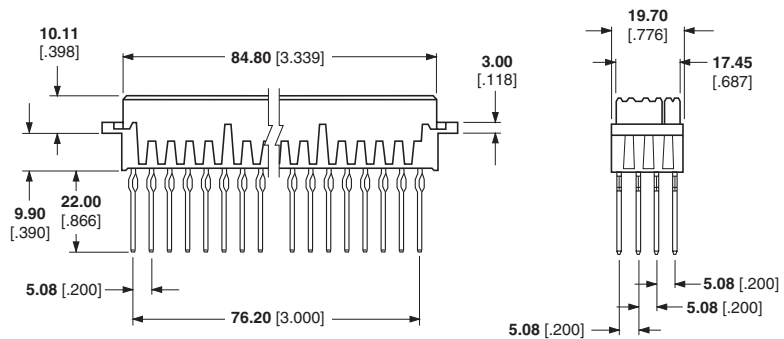
**PC Board Hole Layout** — Request  
customer drawings

**ACTION PIN Contacts** — Pages 70,  
71

**Application Tooling** — Pages 72, 73

**Technical Documents** — Page 74:

DIN Specification 41612  
IEC Specification 60603-2  
Instruction Sheet 408-6927



**Standard Size (for PC Board Thicknesses 2.36 [.093] and Above)**

Number of Positions	Rows Loaded	DIN Level	Part Number
64	Z,B,D,F	II	167771-1

Connector on this page is toolless (flat rock).

**Type M Eurocard Power Connectors**

**Material and Finish**

**Receptacle**

**Signal Contact** — Phosphor-bronze; duplex plated 0.08µm min. gold flash over 0.76µm min. palladium-nickel on contact area; 2.54µm min. tin-lead on solder area; entire contact under plated 1.27µm min. nickel

**Power Contact** — Beryllium Copper; 0.08µm min. gold flash over 0.76µm min. palladium-nickel all over 1.27µm min. nickel

**Housing** — Glass filled polymer

**Header**

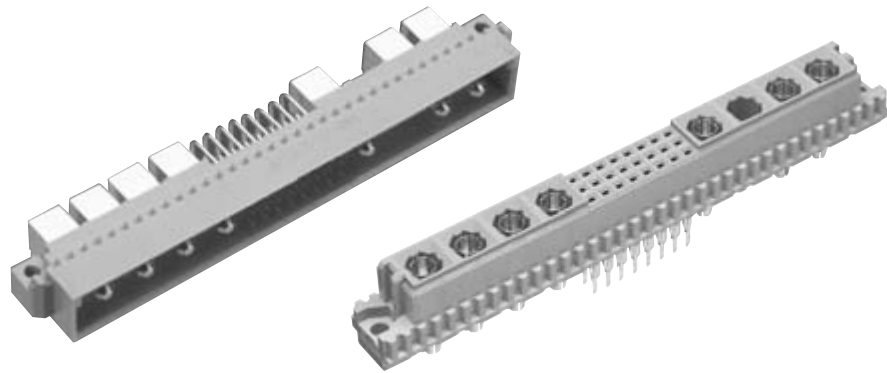
**Signal Contact** — Brass; duplex plated 0.08µm min. gold flash over 0.76µm min. palladium-nickel on contact area; 2.54µm min. tin lead on solder area, entire contact under plated 1.27µm min. nickel

**Power Contact** — Brass, 0.76 µm gold

**Housing** — Glass filled polymer

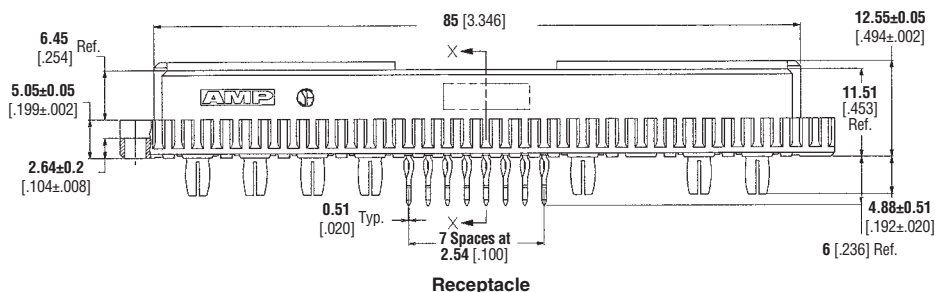
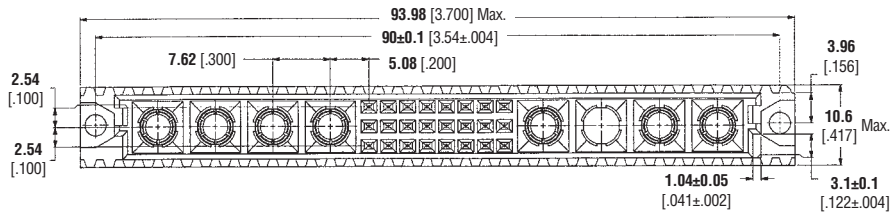
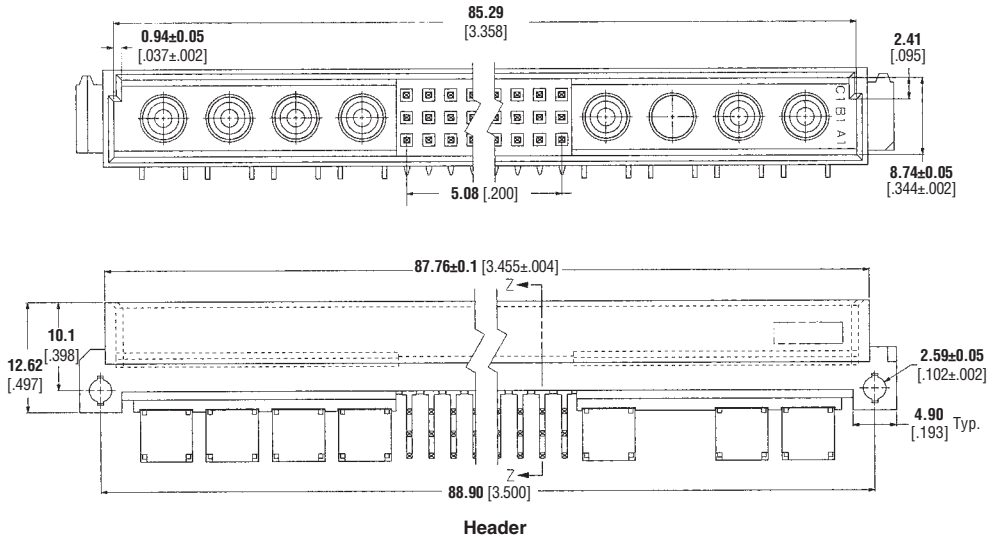
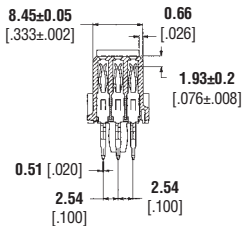
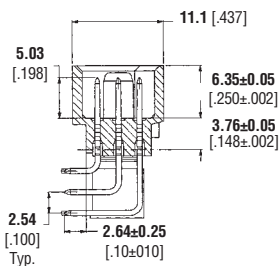
This power connector is defined as the specific power supply connector for front pluggable power supplies per the CompactPCI specification.

- 7 power contacts
- 24 signal contacts
- Length 93.98mm



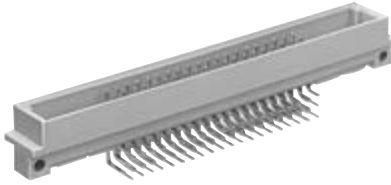
Connector Type	Part Number
ACTION PIN Receptacle	148497-5

Type M Assemblies



CompactPCI is a trademark of PICMG-PCI Industrial Computer Manufacturers Group, Inc.

**Type M Right Angle Pin Assemblies with Solder Posts, for Power and Coaxial Contacts**

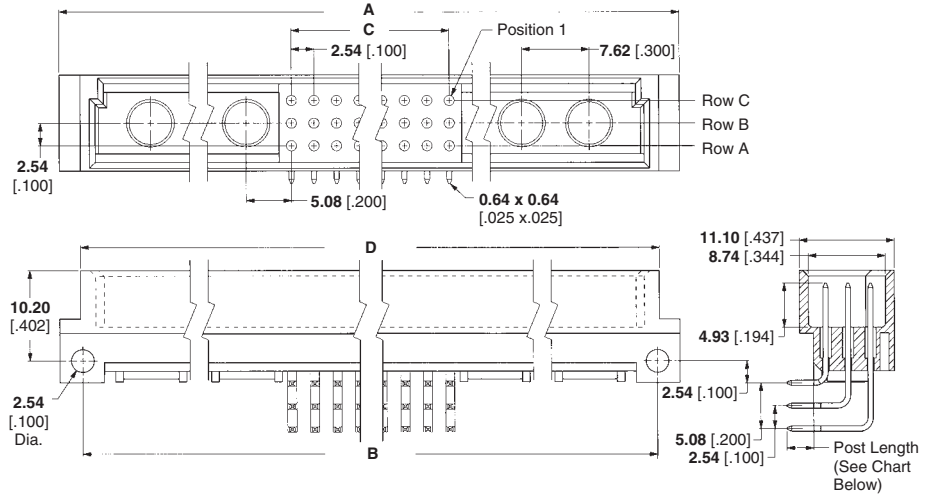


**Material**

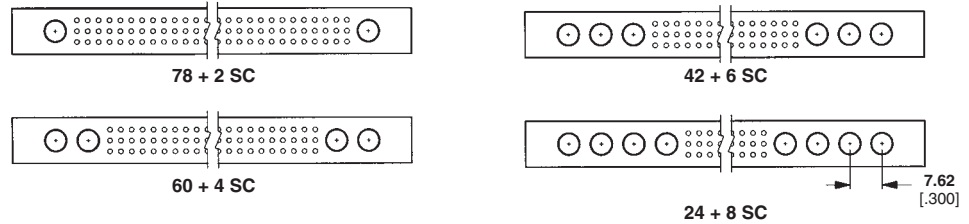
**Housing** — Glass filled polymer  
**Contacts** — Copper alloy  
**DIN II Plating**

**Related Product Data**

**DIN Performance Levels** — Page 7  
**Performance Specifications** — Page 8  
**Mateable Connectors** — Page 44, 45, 46, 47  
**PC Board Hole Layout** — Page 61  
**Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Instruction Sheet 408-6927



**Contact Arrangement**



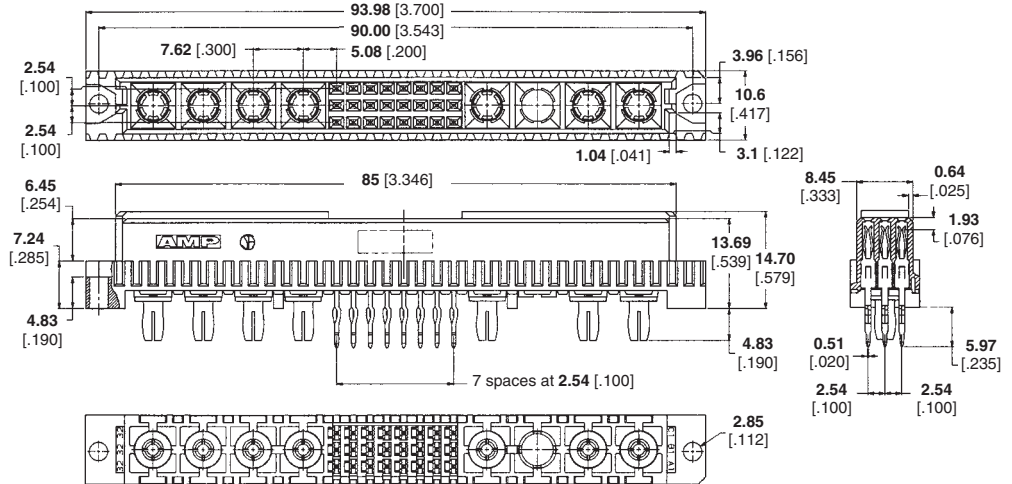
Type M Assemblies

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A Max.	B	C	D			
78+2 SC	A,B,C	94.00	88.90	63.50	87.76	2.64 .104	II	148411-5
		3.700	3.500	2.500	3.455	3.00 .118	I	2-1393644-9
							II	1-1393645-7
52+2 SC	A,C	94.00	88.90	63.50	87.76	3.00 .118	II	1-1393645-9
		3.700	3.500	2.500	3.455			
60+4 SC	A,B,C	94.00	88.90	48.26	87.76	2.64 .104	II	148412-5
		3.700	3.500	1.900	3.455	3.00 .118	I	2-1393644-7
							II	1-1393645-0
40+4 SC	A,C	94.00	88.90	48.26	87.76	3.00 .118	II	1-1393645-1
		3.700	3.500	1.900	3.455			1-1393645-3 <sup>1</sup>
42+6 SC	A,B,C	94.00	88.90	33.02	87.76	2.64 .104	II	148413-5
		3.700	3.500	1.300	3.455	3.00 .118	I	2-1393644-6
							II	1393645-7
24+8 SC	A,B,C	94.00	88.90	17.78	87.76	2.64 .104	II	148414-5
		3.700	3.500	.700	3.455	3.00 .118	II	1393645-3

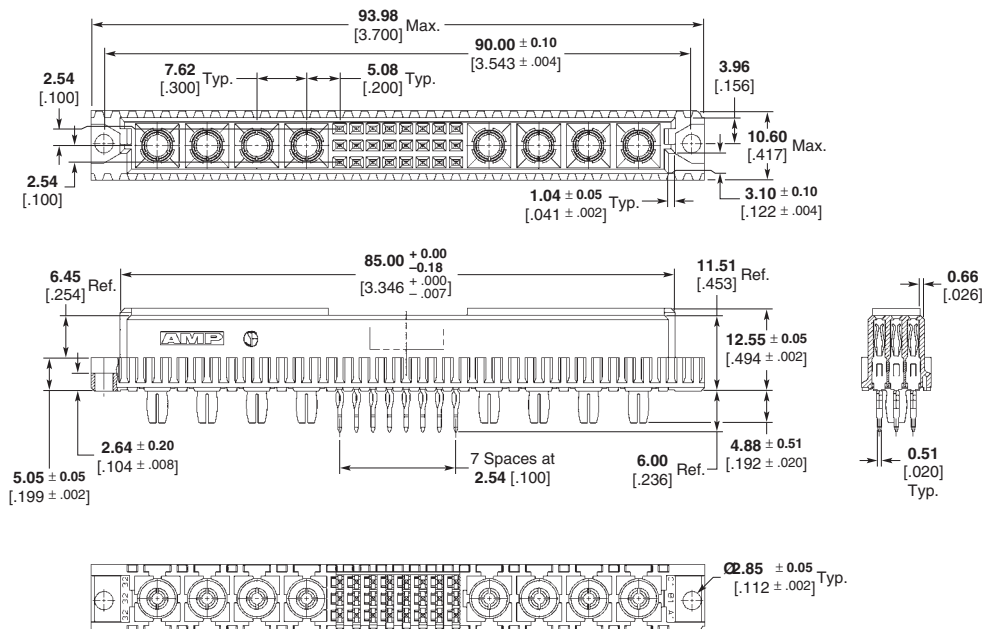
<sup>1</sup> With boardlocks.

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

**Type M Receptacle Assemblies for Compact PCI® Applications**



**Press-Fit**  
Part Number 148370-1 (as shown)  
148370-2 (fully loaded)



**Standard Height**  
Part Number 148497-5 (7) Power

**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** —  
Page 7

**Mateable Connectors** — Page 44

**PC Board Hole Layout** — Page 62

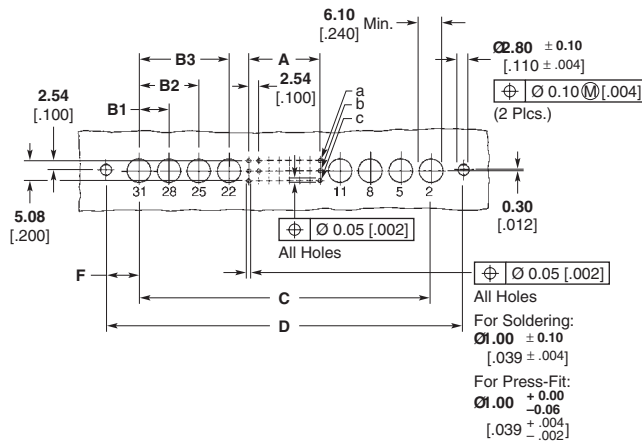
**ACTION PIN Contacts** — Pages 70,  
71

**Application Tooling** — Pages 72, 73

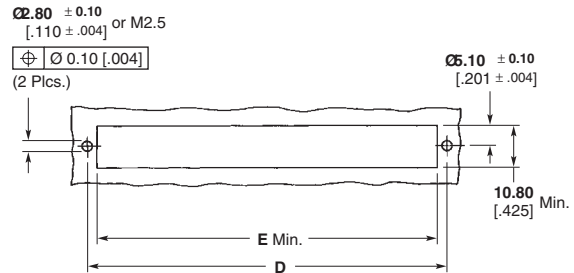
**Technical Documents** — Page 74:  
DIN Specification 41612

CompactPCI is a trademark of  
PICMG-PCI Industrial Computer  
Manufacturers Group, Inc.

**Type M Receptacle Assemblies, Solder Post, Power & Coax Contacts**



Mounting Holes (Component Side) for Printed Circuits



Mounting Holes (Component Side) for Conventional Wiring

Version	Number of Contacts	Dimensions in mm							
		A	B1	B2	B3	C	D	E	F
M	78 + max. 2 SK	25x2.54 = 63.54	—	—	—	73.66	90	85	8.17
	60 + max. 4 SK	19x2.54 = 48.26	3x2.54 = 7.62	—	—	73.66	90	85	8.17
	42 + max. 6 SK	13x2.54 = 33.02	3x2.54 = 7.62	6x2.54 = 15.24	—	73.66	90	85	8.17
	24 + max. 8 SK	7x2.54 = 17.78	3x2.54 = 7.62	6x2.54 = 15.24	9x2.54 = 22.86	73.66	90	85	8.17
M/2	30 + max. 2 SK	9x2.54 = 22.86	—	—	—	33.02	50	45	8.49
	12 + max. 4 SK	3x2.54 = 7.62	3x2.54 = 7.62	—	—	33.02	50	45	8.49
M3	12 + max. 2 SK	3x2.54 = 7.62	—	—	—	17.78	34.76	30	8.49

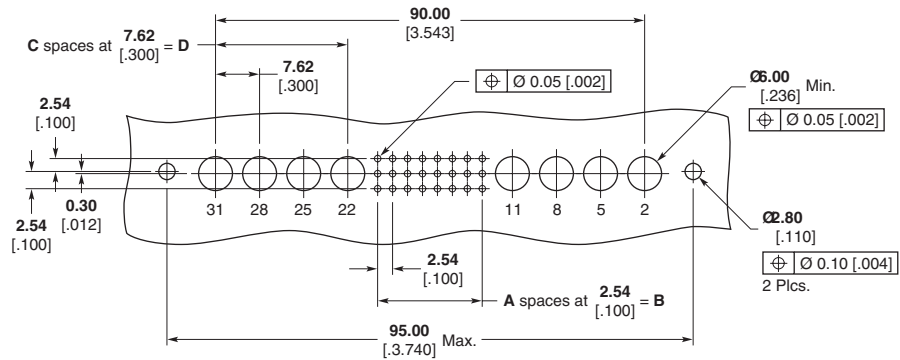
**IEC Type M Female Connectors**

	Power/Special Contacts	No. of Positions	Rows	DIN Level	Connector	Length	Part Number
Half Length M/2	2 Power or Special Contacts	30	A,B,C	II	Straight	2.90 [0.114]	9-1393640-8
						4.50 [0.177]	4-1393641-3
Full Length M	8 Power or Special Contacts	24	A,B,C	II	Straight	2.90 [0.114]	9-1393640-7
						4.50 [0.177]	4-1393641-2
	6 Power or Special Contacts	42	A,B,C	II	Straight	2.90 [0.114]	1393641-1 <sup>1</sup>
						4.50 [0.177]	4-1393641-4
						2.90 [0.114]	1393641-3 <sup>1</sup>
4 Power or Special Contacts	60	A,B,C	II	Straight	4.50 [0.177]	4-1393641-6	
2 Power or Special Contacts	78	A,B,C	II	Straight	2.90 [0.114]	1393641-6 <sup>1</sup>	
					4.50 [0.177]	5-1393641-1	
M3	2 Power or Special Contacts	12	A,B,C	II	Straight	2.90 [0.114]	1393641-9
						4.50 [0.177]	5-1393641-6

<sup>1</sup> Available with mounting clip by request.

**Note:** Performance Level I available upon request.

**Type M Receptacle Assemblies, Solder Post, Power & Coax Contacts** (Continued)

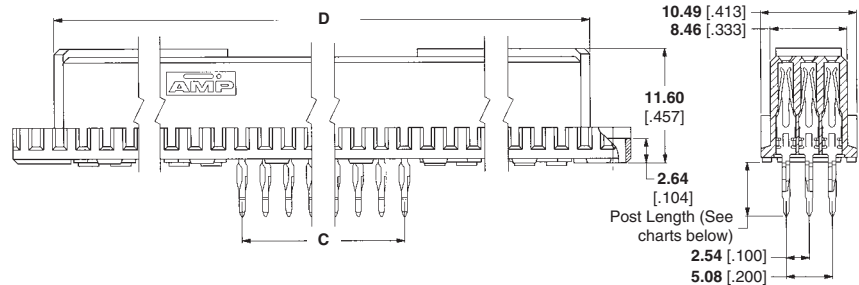
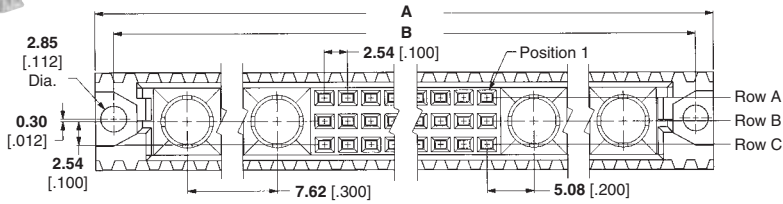
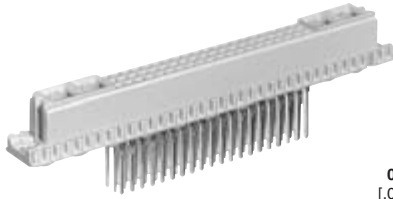


Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
78+2 SC	A,B,C	25	63.50 2.500	0	0.00 .000	2.90 .114	II	1393641-6
						4.50 .177	I	1-1392009-91
						4.50 .177	II	3-1393640-1
78+2 SC	A,C	25	63.50 2.500	0	0.00 .000	2.90 .114	II	1393641-5 <sup>1</sup>
						4.50 .177	II	5-1393641-4
60+4 SC	A,B,C	19	48.26 1.900	1	7.62 .300	2.90 .114	II	1393641-3
						4.50 .177	II	4-1393641-6
60+4 SC	A,C	19	48.26 1.900	1	7.62 .300	2.90 .114	II	1393641-4
						4.50 .177	II	5-1393641-0 <sup>1</sup>
						6.30 .248	II	6-1363641-3
42+6 SC	A,B,C	13	33.02 1.300	2	15.24 .600	2.90 .114	I	1-1393640-3 <sup>1</sup>
						4.50 .177	II	4-1393641-4
24+8 SC	A,B,C	7	17.78 .700	3	22.86 .900	4.50 .177	II	4-1393641-2

<sup>1</sup> With boardlocks.  
**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

Type M Assemblies

**Type M Vertical Receptacle Assemblies with ACTION PIN Posts, for Power and Coaxial Contacts**



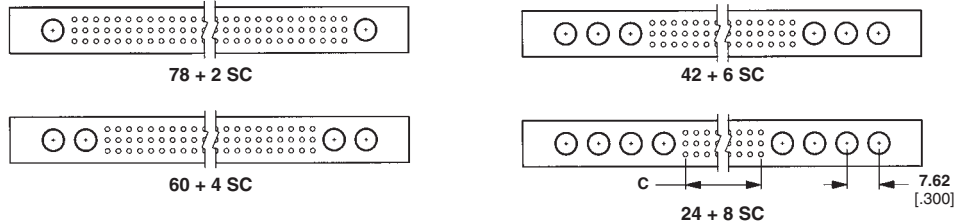
**Material**

- Housing** — Glass filled polymer
- Contacts** — Copper alloy
- DIN II Plating**

**Related Product Data**

- DIN Performance Levels** — Page 7
- Performance Specifications** — Page 8
- Mateable Connectors** — Page 43
- PC Board Hole Layout** — Page 62
- ACTION PIN Contacts** — Pages 70, 71
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2

**Contact Arrangement**



**PC Board Thickness 1.57 [.062] & above**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A Max.	B	C	D			
78+2 SC	A,B,C	95.00 3.740	90.00 3.543	63.50 2.500	85.00 3.346	3.70 .146	II	6-1393637-0
						4.83 .190		
						6.00 .236		
						13.00 .512		
60+4 SC	A,B,C	95.00 3.740	90.00 3.543	48.26 1.900	85.00 3.346	3.70 .146	II	5-1393637-9
						4.83 .190		
						6.00 .236		
42+6 SC	A,B,C	95.00 3.740	90.00 3.543	33.03 1.300	85.00 3.346	3.70 .146	II	5-1393637-7
						4.83 .190		
						6.00 .236		
24+8 SC	A,B,C	95.00 3.740	90.00 3.543	17.78 .700	85.00 3.346	6.00 .236	II	148384-5
						13.00 .512		

Loaded with signal contacts only. See page 48 for female power and coaxial contacts. For "piggy back" applications, contact Tyco Electronics at the numbers listed below.

**Connectors are toolless (flat rock).**

**Power and Coaxial Contacts for Type M Pin Assemblies**

**High Current Contacts**

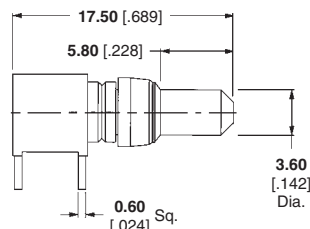
**Material and Finish**

**Contacts** — Copper alloy

**Retaining Ring** — Copper alloy

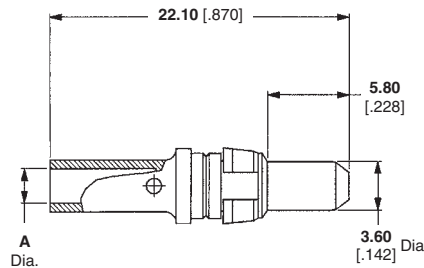
**Note:** These power contacts are used in the Type M Pin Assemblies shown on page 43.

**Male Power Contact for PC Board Mount**



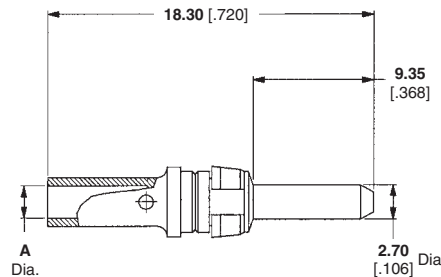
**Part Number 148354-1 or Part Number 1-1393589-8 (25 ampere rated current)**

**Male Power Contacts for Cable Termination**



AWG	Contact Rated Current (Amperes)	Dim. A	Part Number	
			Solder	Crimp
8	40	4.80 .189	1393589-1	—
12-14	20	2.80 .110	1393589-3	148248-1
16-18	10	1.70 .067	1393589-5	148407-1

**Male Power Contacts (MFBL) for Cable Termination**



AWG	Contact Rated Current (Amperes)	Dim. A	Part Number Solder
16-18	10	1.90 .075	3-1393589-5

Type M Assemblies

**Coaxial Contacts**

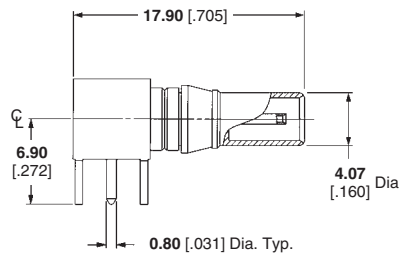
**Material**

**Inner Contact** — Copper alloy

**Insulator** — PTFE

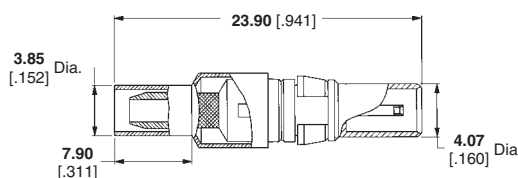
**Note:** These coaxial contacts are used in the Type M Pin Assemblies shown on page 43.

**Coaxial Contact for Male Connector PC Board Mount**



**Part Number 1-1393662-4**

**Coaxial Contacts for Male Connectors, Cable Termination**



Cable Type	Part Number
RG316	1392020-1
RG179	3-1393668-4



**Power Contacts**

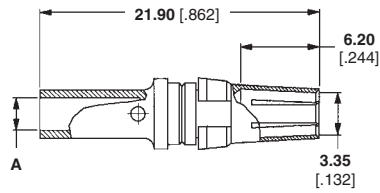
**Material and Finish**

**Contacts** — Copper alloy

**Retaining Ring** — Copper alloy

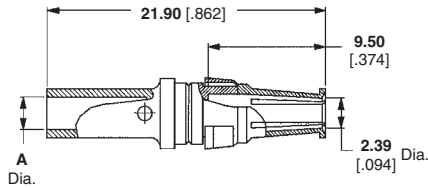
**Note:** These power contacts are used in the Type M Receptacle Assemblies shown on page 47.

**Female Power Contacts for Cable Termination**



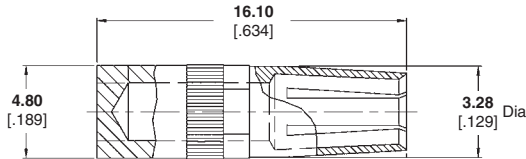
AWG	Contact Rated Current (Amperes)	Dim. A	Part Number	
			Solder	Crimp
8	40	4.80 .189	1393589-7	—
10	30	3.45 .136	—	148357-1
12-14	20	2.80 .110	1393589-9	148221-1
16-18	10	1.70 .067	1-1393589-1	—

**Female Power Contacts (MFBL) for Cable Termination**



AWG	Contact Rated Current (Amperes)	Dim. A	Part Number
			Solder
8	40	4.80 .189	1-1393589-6
12-14	20	2.80 .110	1-1393589-5
16-18	10	1.70 .067	1-1393589-4

**Female Power Contact for PC Board Mount**



**Part Number 148375-1**  
(40 ampere rated current)

**Coaxial Contacts**

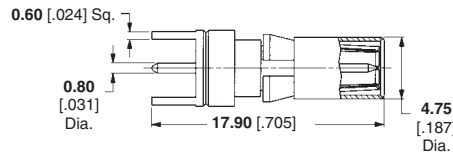
**Material**

**Outer Contact** — Copper alloy

**Insulator** — PTFE

**Note:** These coaxial contacts are used in the Type M Receptacle Assemblies shown on page 47.

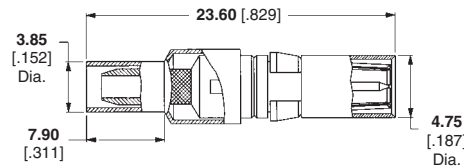
**Coaxial Contact for Female Connector, PC Board Mount**



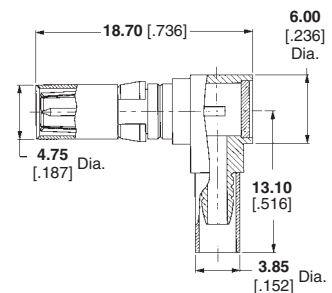
**Part Number 1-1393662-0**

**Note:** Contact will raise the connector assembly up 3.18 [0.125] from the PC board surface.

**Coaxial Contacts for Female Connectors, Cable Termination**

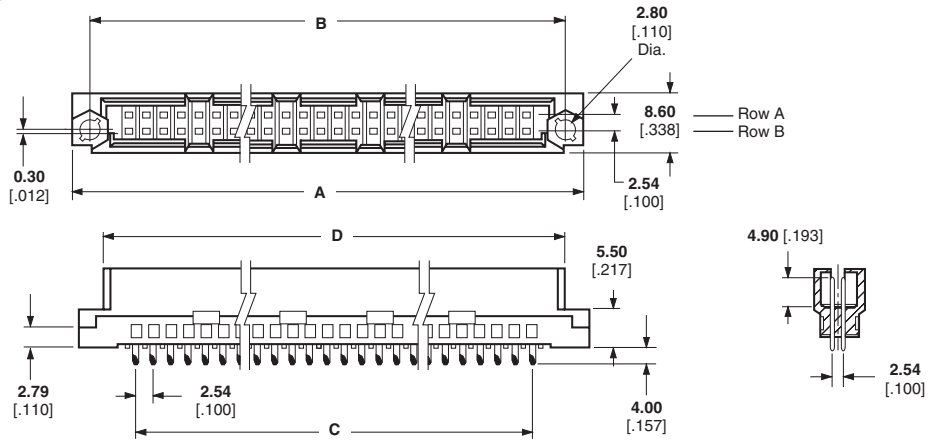
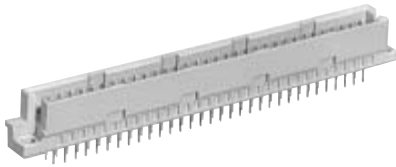


Cable Type	Part Number
RG316	1392019-1
RG179	3-1393668-0



**Part Number 1393668-4**  
**90° Right Angle**  
**for RG316 Cable**

**Type Q Vertical Pin Assemblies with Solder Posts**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 15, 16, 51

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 68, 69

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
64	A,B	94.80 3.732	90.00 3.543	78.74 3.100	88.01 3.465	III	174254-2

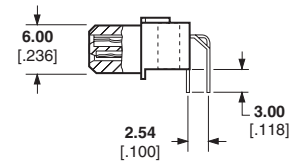
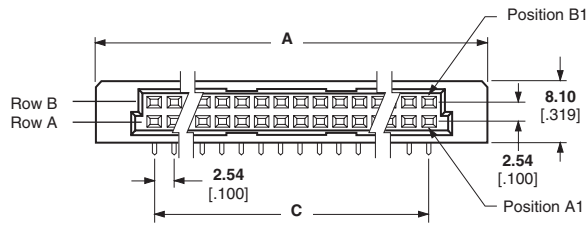
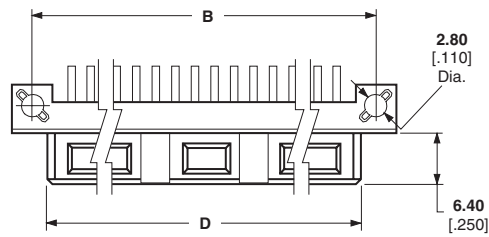
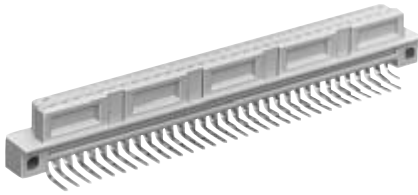
**Half Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
32	A,B	54.10 2.130	49.30 1.941	38.10 1.500	47.37 1.865	III	174254-1

**Expanded Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
80	A,B	115.10 4.531	110.30 4.343	99.06 3.900	108.33 4.265	III	174254-3

**Type Q Right Angle Receptacle Assemblies with Solder Posts and MFBL Contacts**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 8
- Mateable Connectors** — Pages 14, 50
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 68, 69
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
64	A,B	93.80 3.693	88.90 3.500	78.74 3.100	84.90 3.343	III	174253-2

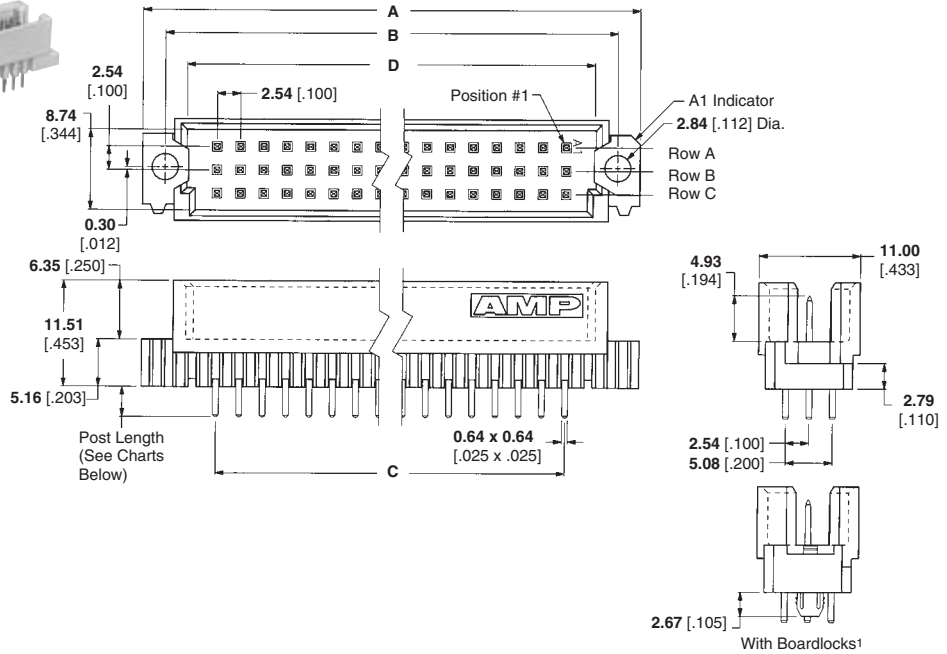
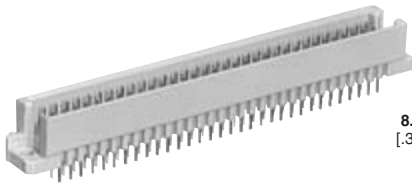
**Note:** Locations of MFBL contacts; B1, B32.

**Half Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
32	A,B	53.10 2.091	48.24 1.899	38.10 1.500	44.20 1.740	III	174253-1

**Note:** Locations of MFBL contacts; B1, B16.

**Type R Vertical Pin Assemblies with Solder Posts**



**Material**

**Housing** — Glass filled polymer  
**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6  
**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 20, 21, 23, 24, 29-31, 55-57

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 64, 68, 69

**Technical Documents** — Page 74:

DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	95.00 3.740	90.00 3.543	78.74 3.100	85.29 3.358	3.30 .130	II	650908-5
						4.50 .177	I	1-1393659-1
						4.57 .180	II	650470-5
64	A,C	95.00 3.740	90.00 3.543	78.74 3.100	85.29 3.358	3.30 .130	II	650933-5
						4.50 .177	II	4-1393659-7
						4.57 .180	II	650934-5

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
48	A,B,C	54.37 2.140	49.35 1.943	38.10 1.500	44.65 1.758	2.90 .114	II	2-1393659-6
						3.30 .130	II	650479-5
						4.50 .177	II	3-1393659-9
						4.57 .180	II	650477-5
32	A,C	54.37 2.140	49.35 1.943	38.10 1.500	44.65 1.758	4.57 .180	II	650936-5

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
30	A,B,C	39.76 1.565	34.76 1.368	22.86 .900	32.12 1.264	2.90 .114	II	2-1393659-3
						4.50 .177	II	3-1393659-5

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

**Type R Vertical Pin Assemblies with Solder Posts** (Continued)

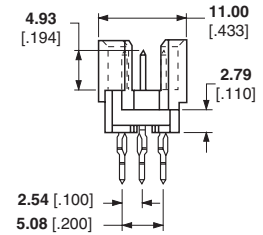
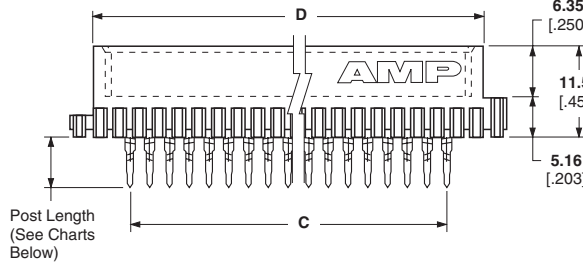
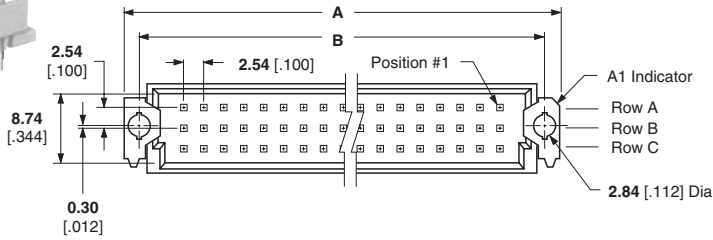
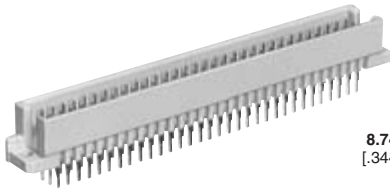
**Expanded Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
120	A,B,C	<b>115.19</b>	<b>110.31</b>	<b>99.06</b>	<b>105.61</b>	<b>3.30</b> .130	II	650919-5
		4.535	4.343	3.900	4.158	<b>4.57</b> .180	II	650910-5
150	A,B,C	<b>140.59</b>	<b>135.71</b>	<b>124.46</b>	<b>130.01</b>	<b>3.30</b> .130	II	650922-5
		5.535	5.343	4.900	5.158	<b>4.57</b> .180	II	536427-5 <sup>1</sup> 650911-5

<sup>1</sup> With boardlocks.

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

**Type R Vertical Pin Assemblies with ACTION PIN Posts  
(0.64 [.025] Square)**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 6

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 20, 21, 23, 24, 29-31, 55-57

**PC Board Hole Layout** — Page 58

**Accessories** — Pages 63, 64, 68, 69

**Action PIN Contacts** — Pages 70, 71

**Application Tooling** — Pages 72, 73

**Technical Documents** — Page 74:

DIN Specification 41612

IEC Specification 60603-2

Application Specification

114-9014

Instruction Sheets 408-6927,

408-9740

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	95.00	90.00	78.74	88.01	4.00	II	1-1393658-4
		3.740	3.543	3.100	3.465	.157		
		6.35	6.35	6.35	6.35	.250		
64	A,C	95.00	90.00	78.74	88.01	4.00	II	1-1393658-5
		3.740	3.543	3.100	3.465	.157		
		6.35	6.35	6.35	6.35	.250		
							II	1-650909-5
						13.23		650909-5
						.521		1-650909-4 <sup>1</sup>
						13.23		1-650930-4 <sup>1</sup>
						.521		

<sup>1</sup> Precious metal plating in contact area and 5.08 [.200] from the tip of the post.

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
48	A,B,C	54.37	49.35	38.10	47.37	6.35	II	650918-5
		2.140	1.943	1.500	1.865	.250		
		13.23	13.23	13.23	13.23	.521		
32	A,C	54.37	49.35	38.10	47.37	6.35	II	650931-4
		2.140	1.943	1.500	1.865	.250		
		13.23	13.23	13.23	13.23	.521		
							II	1393658-2

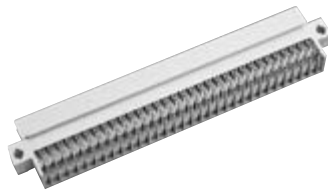
**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
30	A,B,C	39.76	34.76	22.86	32.12	4.00	II	1-1393658-0
		1.565	1.368	.900	1.264	.157		

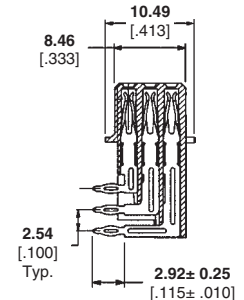
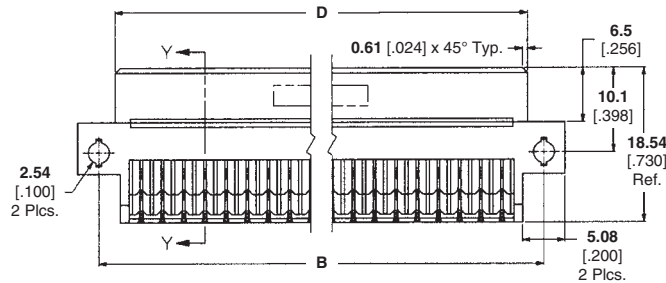
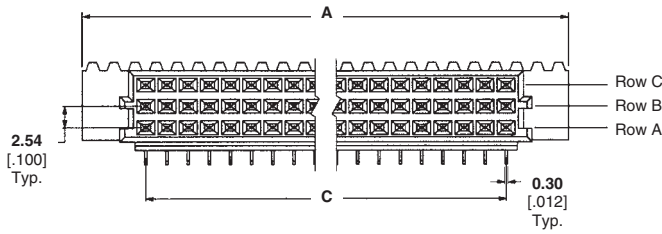
**Expanded Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
120	A,B,C	115.19	110.31	99.06	108.33	6.35	II	650921-5
		4.535	4.343	3.900	4.265	.250		
		6.35	6.35	6.35	6.35	.250		
150	A,B,C	140.59	135.71	124.46	133.73	6.35	II	650924-5
		5.535	5.343	4.900	5.265	.250		
		13.23	13.23	13.23	13.23	.521		
							II	650923-5

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.



**Type R Receptacle with Eye of Needle Compliant Pin**



**Material**

**Housing** — Glass filled polymer

**Contacts** — Copper alloy

**Related Product Data**

**DIN Performance Levels** — Page 7

**Performance Specifications** — Page 8

**Mateable Connectors** — Pages 17-19, 28, 52-54

**PC Board Hole Layout** — Page 58

**Technical Documents** — Page 74

DIN Specification 41612

IEC Specification 60603-2

Application Specification 114-9014

Instruction Sheet 408-6784

**Standard Size**

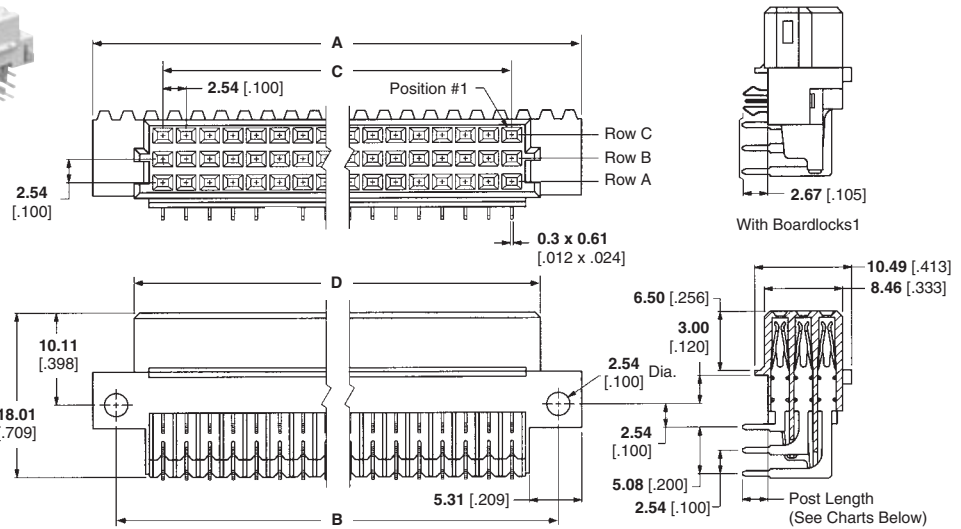
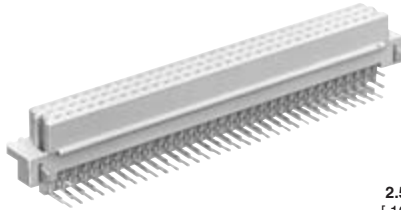
Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
96	A,B,C	93.88 3.696	88.90 3.500	78.74 3.100	85.00 3.346	II	148292-5
	A,B A,C	93.88 3.696	88.90 3.500	78.74 3.100	85.00 3.346		

**Expanded Size**

Number of Positions	Rows Loaded	Dimensions				DIN Level	Part Number
		A	B	C	D		
120	A,B,C	114.20 4.496	109.22 4.300	99.06 3.900	105.31 4.146	II	148360-5
150	A,B,C	139.60 5.496	134.62 5.300	124.46 4.900	130.71 5.146	II	148295-5

Connectors on this page are toolless (flat rock).

**Type R Right Angle Receptacle Assemblies with Solder Posts  
(with and without Boardlocks)**



**Material**

**Housing** — Glass filled polymer  
**Contacts and Boardlocks** — Copper alloy

**Related Product Data**

- DIN Performance Levels** — Page 6
- Performance Specifications** — Page 8
- Mateable Connectors** — Pages 17, 19, 28, 52-54
- PC Board Hole Layout** — Page 58
- Accessories** — Pages 64, 68, 69
- Technical Documents** — Page 74:  
DIN Specification 41612  
IEC Specification 60603-2  
Application Specification 114-9014  
Instruction Sheet 408-6784

**Standard Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
96	A,B,C	93.87	88.90	78.74	85.00	2.79 .110	II	650461-4
		3.696	3.500	3.100	3.346			650461-5
								650895-4 <sup>1</sup>
					3.00 .118	II	650895-5 <sup>1</sup>	
							148242-5 <sup>1,2</sup>	
							3-1393656-4	
64	A,C	93.87	88.90	78.74	85.00	2.79 .110	II	2-1393656-9 <sup>1</sup>
		3.696	3.500	3.100	3.346			650462-4
								650462-5
					3.00 .118	II	650870-4	
							650870-5	
							650897-4 <sup>1</sup>	
				3.00 .118	I	650897-5 <sup>1</sup>		
						1-1393656-1		
						3-1393656-6		
					II	3-1393656-0 <sup>1</sup>		

**Half Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
48	A,B,C	53.24	49.26	38.10	44.35	2.79 .110	II	650868-4
		2.096	1.900	1.500	1.746			650868-5
					3.00 .118	III	650893-5 <sup>1</sup>	
							650868-9	
32	A,C	53.24	49.26	38.10	44.35	3.00 .118	II	2-1393656-7
		2.096	1.900	1.500	1.746			2-1393656-5 <sup>1</sup>
							2-1393656-8	

**Third Size**

Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
30	A,B,C	38.12	33.02	22.86	29.12	3.00 .118	II	2-1393656-2 <sup>1</sup>
		1.501	1.300	.900	1.146			

<sup>1</sup> With boardlocks.

<sup>2</sup> High temperature.

**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.



**Type R Right Angle Receptacle Assemblies with Solder Posts**  
(with and without Boardlocks) (Continued)

**Expanded Size**

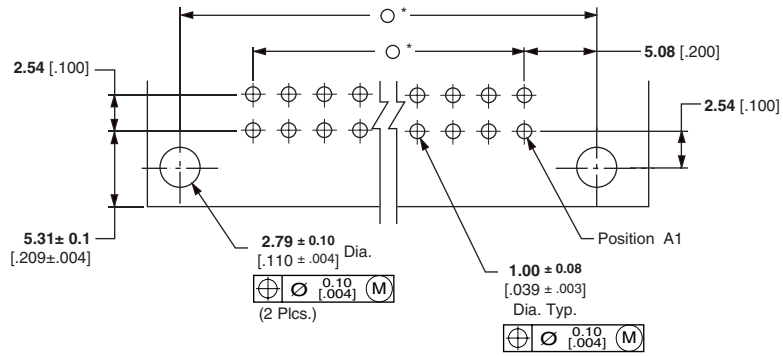
Number of Positions	Rows Loaded	Dimensions				Post Length	DIN Level	Part Number
		A	B	C	D			
120	A,B,C	<b>114.20</b>	<b>109.22</b>	<b>99.06</b>	<b>105.21</b>	<b>2.79</b>	II	650874-4
		4.496	4.300	3.900	4.142	.110		650874-5
150	A,B,C	<b>139.60</b>	<b>134.62</b>	<b>124.46</b>	<b>130.61</b>	<b>2.79</b>	II	650875-5
		5.496	5.300	4.900	5.142	.110		650959-5 <sup>1</sup>

<sup>1</sup> With boardlocks.

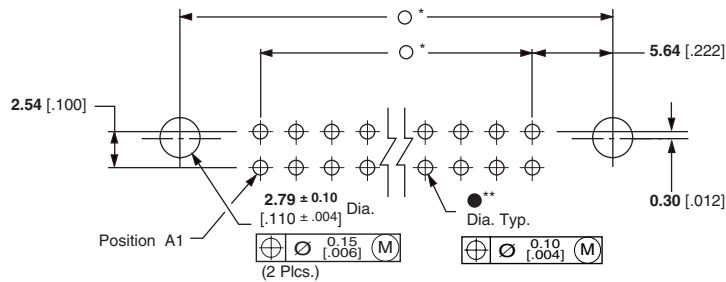
**Note:** Select Load and MFBL available upon request, contact Tyco Electronics at the numbers listed below.

**Recommended PC Board Hole Layouts, Viewed from Connector Side**

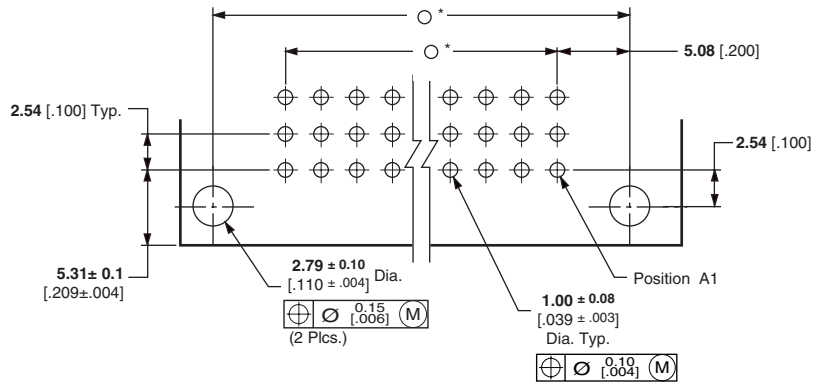
**Type B Pin and Type Q Receptacle Assemblies**



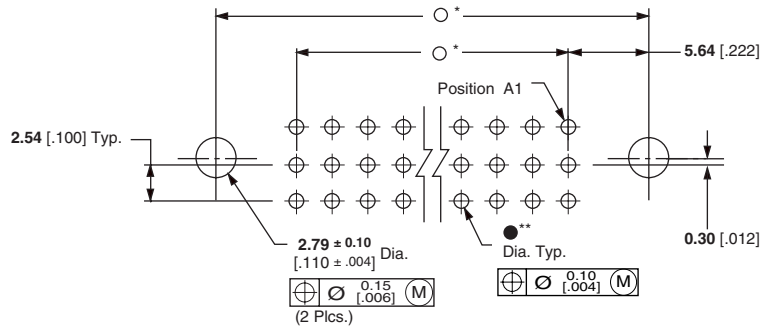
**Type Q Pin and Type B Receptacle Assemblies**



**Type C Pin and Type R Receptacle Assemblies**



**Type R Pin and Type C Receptacle Assemblies**

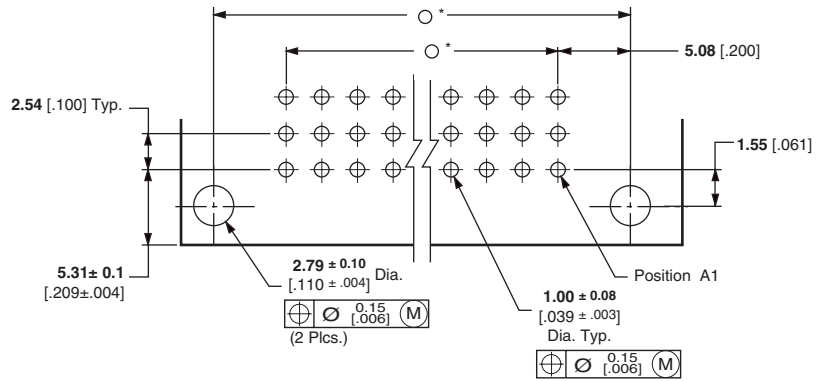


\* ○ For specific dimensions, refer to appropriate customer drawing.  
 \*\* ● For hole diameter for ACTION PIN posts, refer to page 71 in this catalog. For hole diameter for solder posts, refer to appropriate customer drawing.

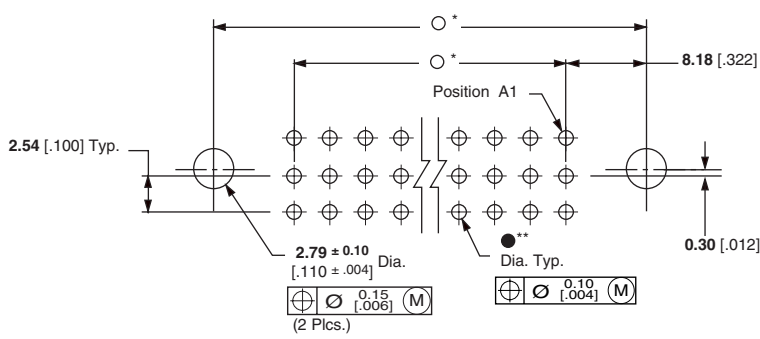
Recommended PC Board Hole Layouts

**Recommended PC Board Hole Layouts, Viewed from Connector Side (Continued)**

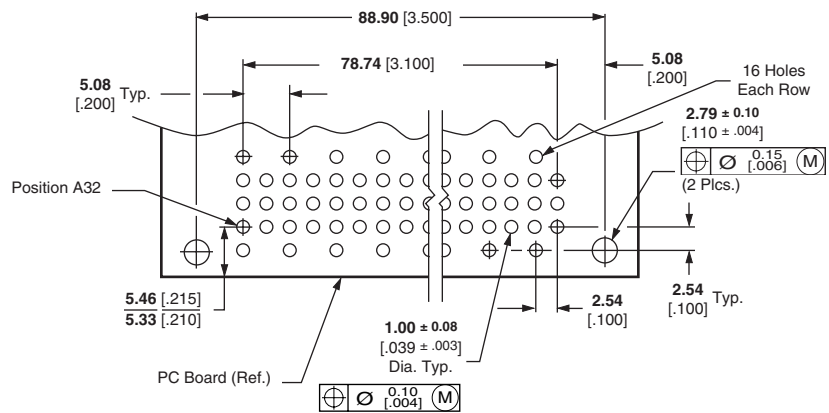
**Type C Pin Assemblies with Guide Feature**



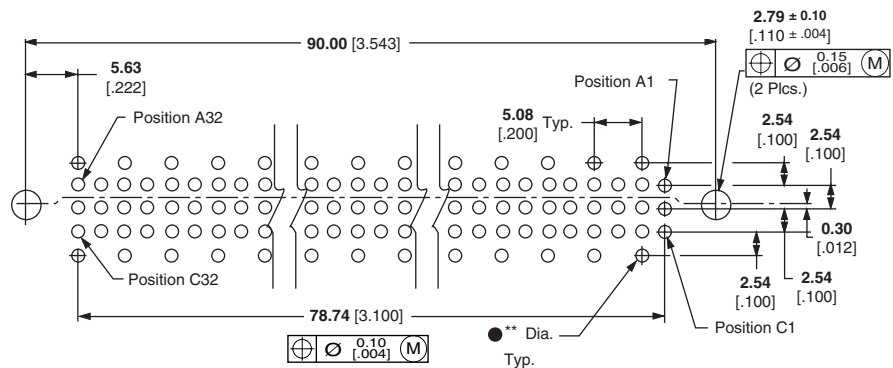
**Type C Receptacle with Guide Feature**



**Enhanced Type C Pin Assembly**



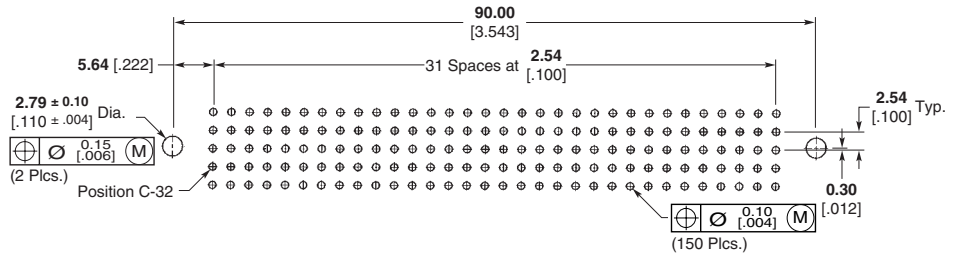
**Enhanced Type C Receptacle Assembly**



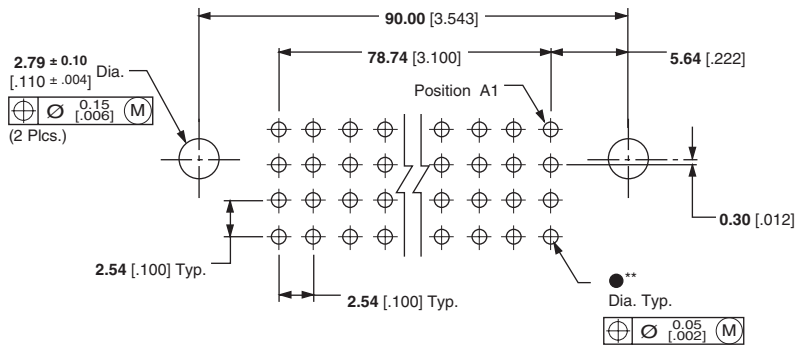
\* ○ For specific dimensions, refer to appropriate customer drawing.  
\*\* ● For hole diameter for ACTION PIN posts, refer to page 71 in this catalog. For hole diameter for solder posts, refer to appropriate customer drawing.

**Recommended PC Board Hole Layouts, Viewed from Connector Side (Continued)**

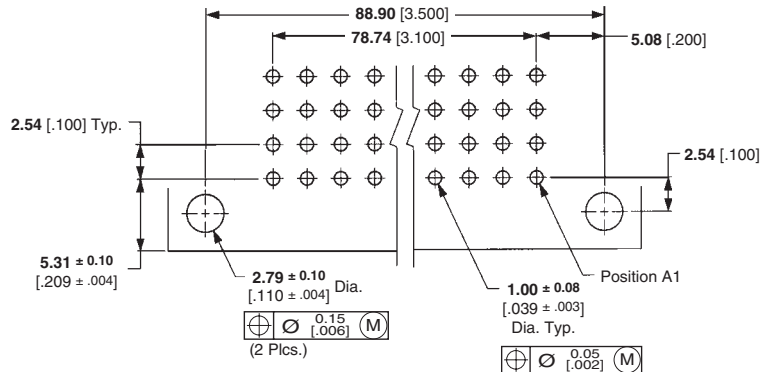
**VME64 X Type C Receptacle Assembly**



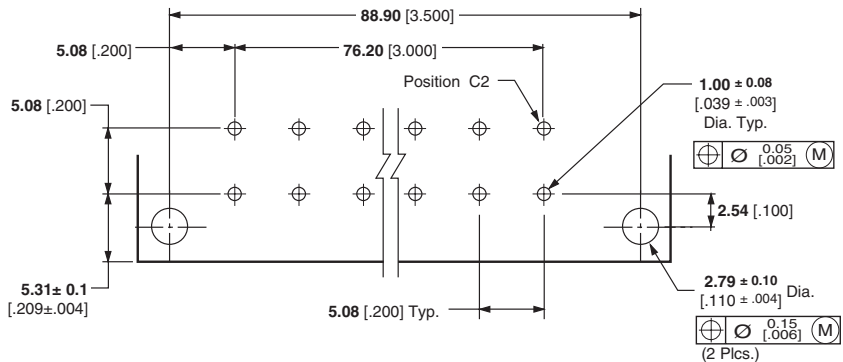
**Four-Row Vertical Receptacle Assembly**



**Four-Row Right Angle Pin Assembly**



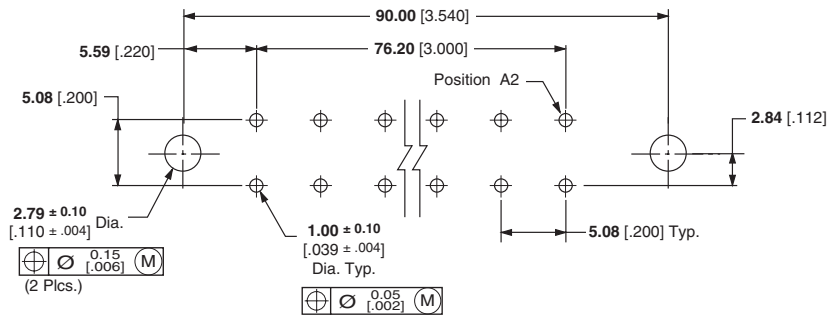
**Type D Pin Assembly**



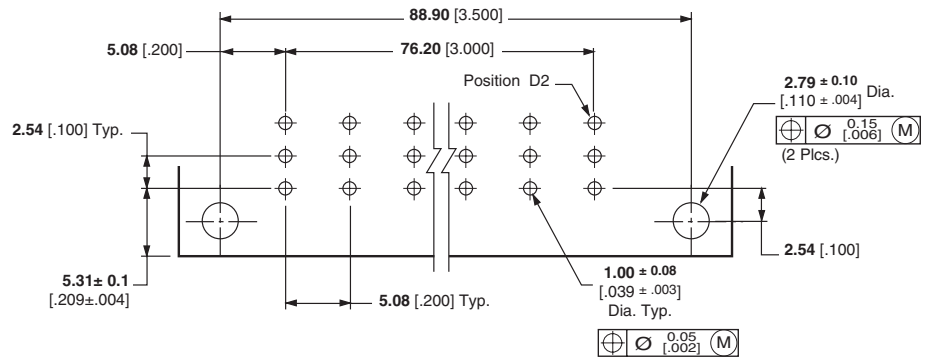
\*\* ● For hole diameter for ACTION PIN posts, refer to page 71 in this catalog. For hole diameter for solder posts, refer to appropriate customer drawing.

**Recommended PC Board Hole Layouts, Viewed from Connector Side (Continued)**

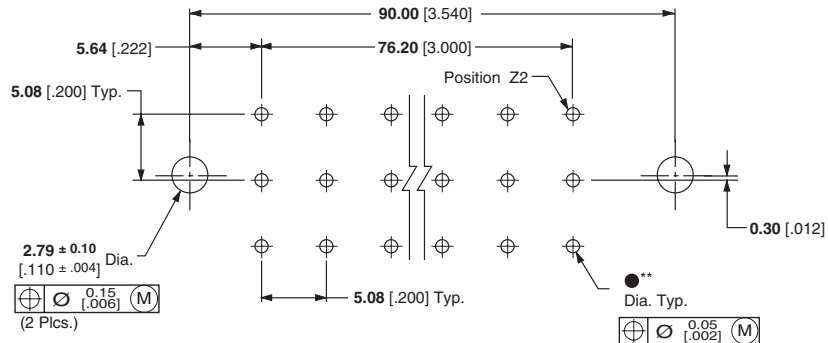
**Type D Receptacle Assembly**



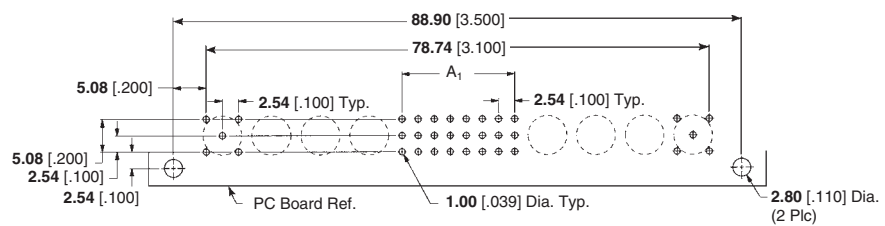
**Type F Pin Assembly**



**Type F Receptacle Assembly**



**Type M Pin Assembly**



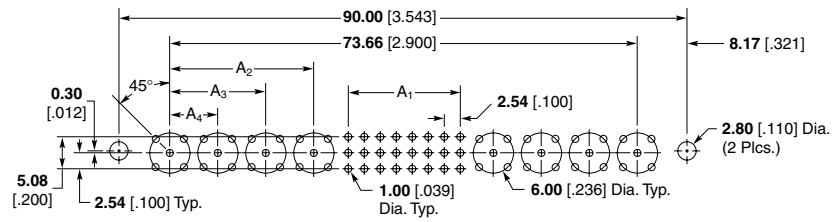
Number of Positions	Dimension A <sub>1</sub>
24 x 8	17.78 .700
42 x 6	33.02 1.300
60 x 4	48.26 1.900
78 x 2	63.50 2.500

\*\*● For hole diameter for ACTION PIN posts, refer to page 71 in this catalog. For hole diameter for solder posts, refer to appropriate customer drawing.

Recommended PC Board Hole Layouts

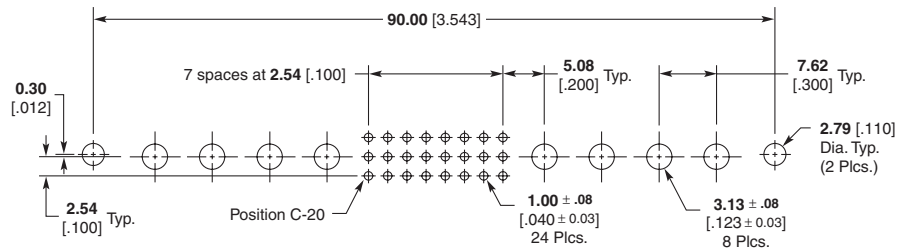
**Recommended PC Board Hole Layouts, Viewed from Connector Side (Continued)**

**Type M Receptacle Assembly**



Number of Positions	Dimensions			
	A <sub>1</sub>	A <sub>2</sub>	A <sub>3</sub>	A <sub>4</sub>
24 x 8	17.78 .700	22.86 .900	15.24 .600	7.62 .300
42 x 6	33.02 1.300	—	15.24 .600	7.62 .300
60 x 4	48.26 1.900	—	—	7.62 .300
78 x 2	63.50 2.500	—	—	—

**Type M Receptacle for CompactPCI Bus Applications**

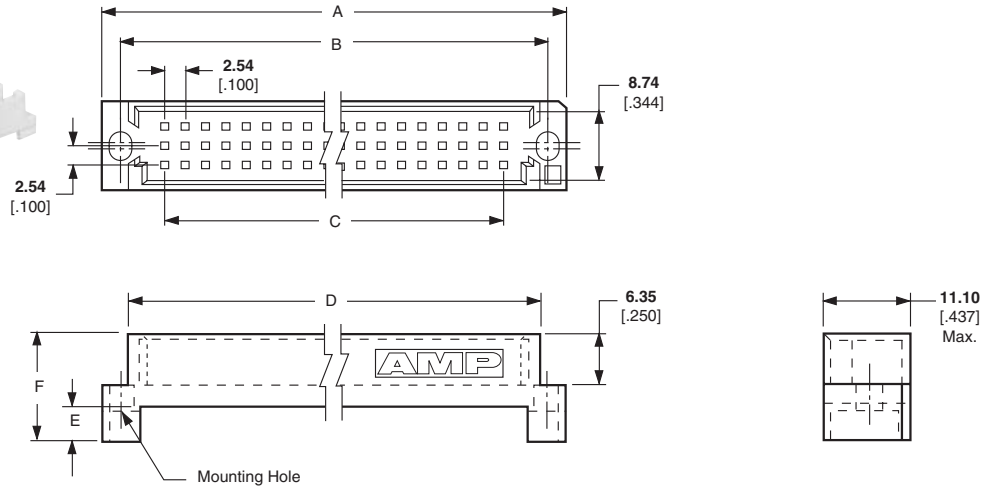


**Note:** Reference customer drawings for tolerances.

CompactPCI is a trademark of PICMG-PCI Industrial Computer Manufacturers Group, Inc.

**Shrouds**

For Type C and Type R  
Standard and Half Size  
Connectors  
(96 and 48 Positions)



**Material**

Glass filled polymer

**Related Product Data**

**Technical Documents** — Page 74:  
Application Specification 114-9014

**Standard Size**

PC Board Thickness	Use With Post Length	Dimensions						Part Number	
		A	B	C	D	E	F	Without Mounting Holes	With Mounting Holes
3.18 .125	13.23	95.00	90.00	78.74	88.14	2.54	11.43	533236-4	535074-1
	.521	3.740	3.543	3.100	3.470	.100	.450		
2.36 .093	16.99	95.00	90.00	78.74	88.14	6.35	15.24	533236-5	535074-2
	.669	3.740	3.543	3.100	3.470	.250	.600		
1.57 .062	13.23	95.00	90.00	78.74	88.14	3.43	12.32	533236-7	—
	.521	3.740	3.543	3.100	3.470	.135	.485		
1.57 .062	16.99	95.00	90.00	78.74	88.14	7.24	16.13	533236-8	—
	.669	3.740	3.543	3.100	3.470	.285	.635		
1.57 .062	13.23	95.00	90.00	78.74	88.14	4.19	13.08	1-533236-0	—
	.521	3.740	3.543	3.100	3.470	.165	.515		
1.57 .062	16.99	95.00	90.00	78.74	88.14	8.00	16.89	1-533236-1	—
	.669	3.740	3.543	3.100	3.470	.315	.665		

**Half Size**

PC Board Thickness	Use With Post Length	Dimensions						Part Number	
		A	B	C	D	E	F	Without Mounting Holes	With Mounting Holes
1.57 .062	13.23 .521	54.15 2.132	44.65 1.758	38.10 1.500	47.50 1.870	4.19 .165	13.08 .515	—	650437-1

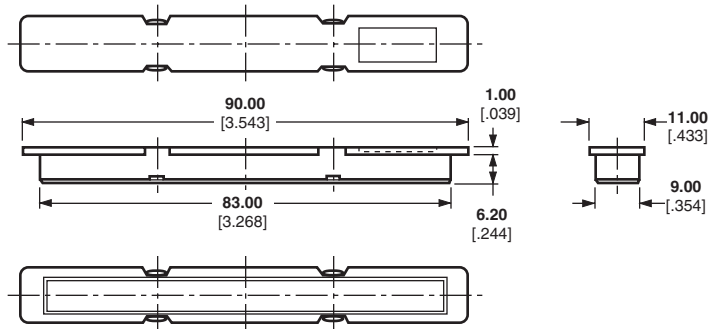
**Note:** Shrouds are for use with all 96- and 48-position, 3-row, Type C and R Connectors mounted in 3.18 [.125], 2.36 [.093] and 1.57 [.062] thick PC boards. Four interference areas are located in selected cavities.

**Dust Covers**

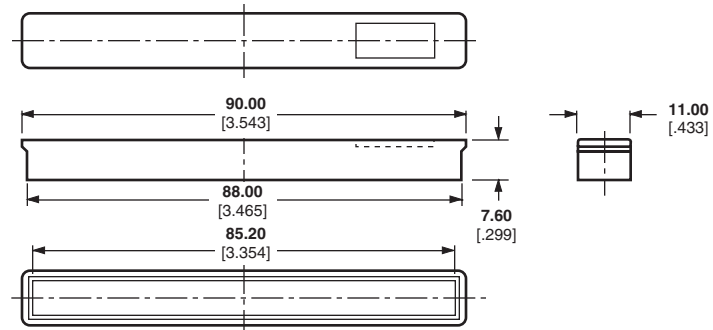
For Type C and Type R  
Standard Size Connectors  
(96 and 64 Positions)



**Material**  
Thermoplastic



**Part Number 174375-1**  
(For Pin Housing)



**Part Number 174376-1**  
(For Receptacle Housing)



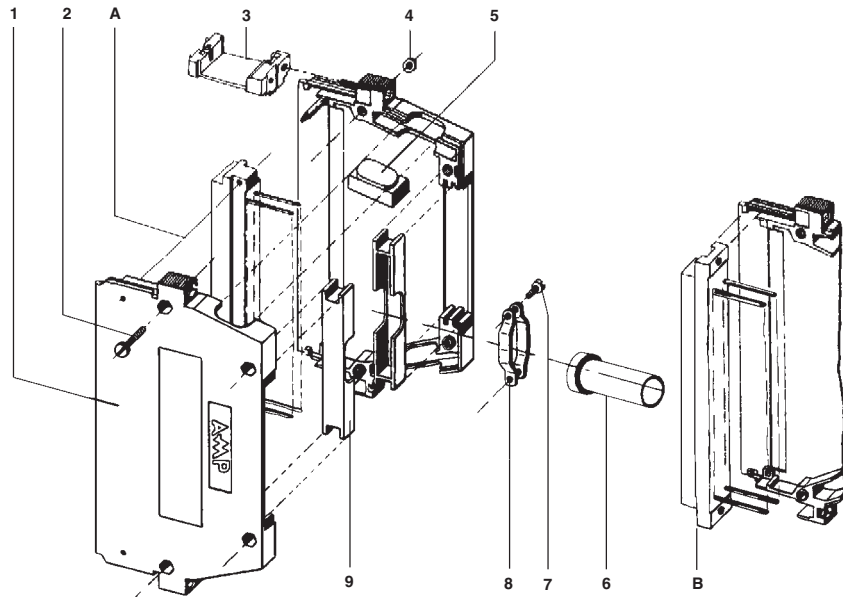
**Two-Piece Cable Clamp Assemblies**

**Kit parts are packaged unassembled**

**Part Details**

Item	Description
A;B	Pin Assembly; Receptacle Assembly (Show for ref. only)
1	Cover (shell half)
2	Screw M 2.5 [.10] x ...DIN 84
3	Guide Bracket (not supplied in kit)
4	Hex. nut M 2.5 [.10] DIN 439
5	Cable outlet closing plate
6	Cable Boot
7	Screw M 2.5 [.10] x ...DIN 84
8	Strain Relief Clamp
9	Fixture for 180° Cable outlet

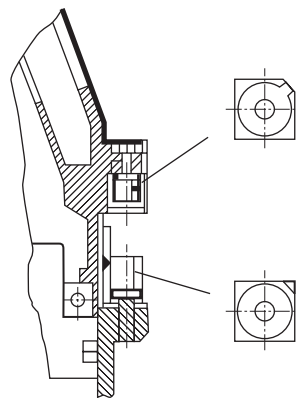
Kit includes strain relief clamp (Item 8) Part No. 826199-6 and cable boot (Item 6) No. 826199-5. They may also be purchased separately.



Part Number 826196-1

**Keying Kit**

Kit includes two guide pins, and two keying plugs with screws



Keying Kit  
Number 827107-1

**Two-Piece Cable Clamp Assemblies** (Continued)

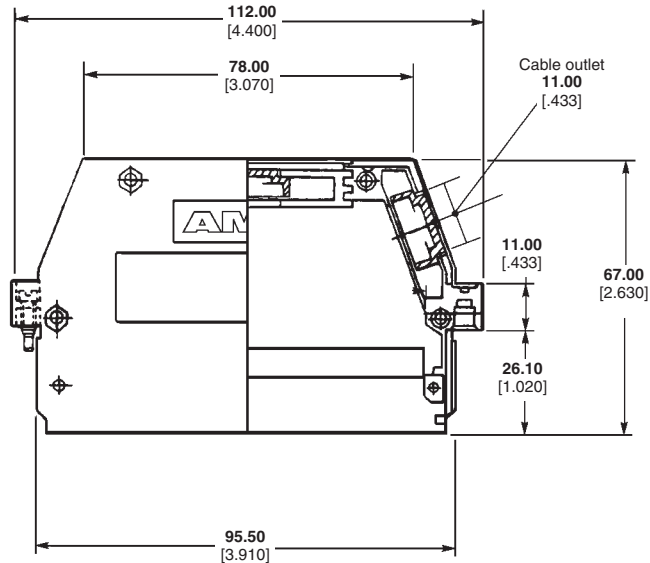
**Cable Hood Kit,  
Type C and Type D**

**Material**

**Housing** — Thermoplastic, grey,  
94V-1 rated

**Part Number 826196-1**

Kit includes covers, guide pins, covers for unused cable exits, strain relief clamp and all necessary hardware.



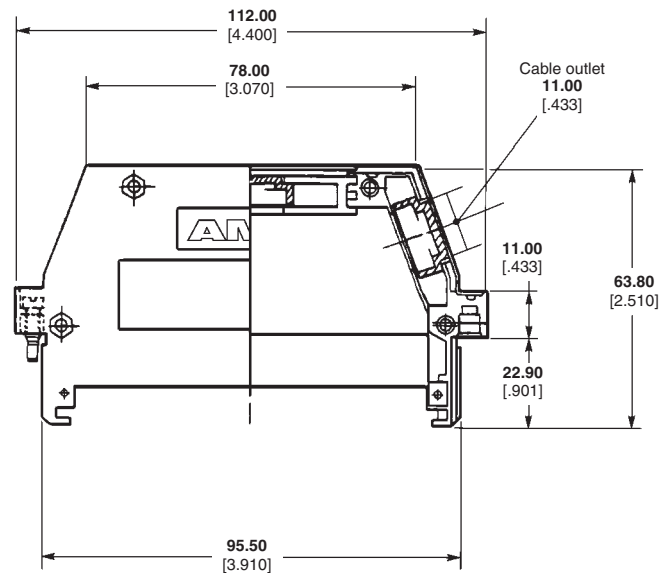
**Cable Hood Kit,  
Type F**

**Material**

**Housing** — Thermoplastic, grey,  
94V-1 rated

**Part Number 826198-1**

Kit includes covers, guide pins, covers for unused cable exits, strain relief clamp and all necessary hardware.

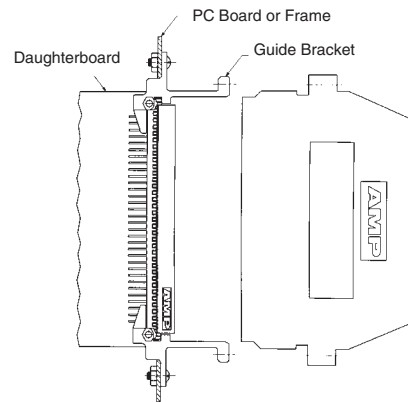


**Front Mounting**

**Material**

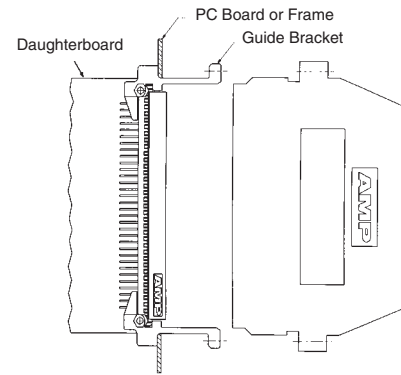
**Bracket** — Polycarbonate, black, 94V-1 rated

**Guide Brackets**



For Connector	Part Number
Type C,D	4-826199-0
Type F	5-826199-0*
Type F	6-826199-0*

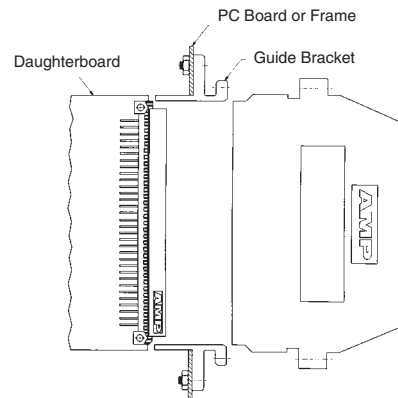
\* Suitable for variable rails, see customer drawing



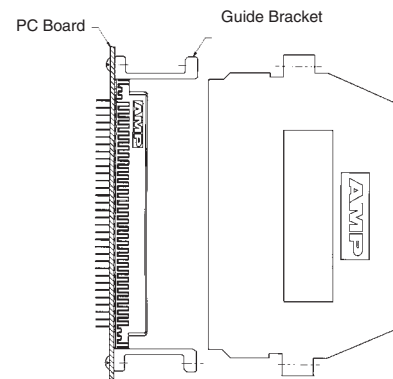
For Connector	Part Number
Type C,D	7-826199-0*
Type F	8-826199-0**

\* Similar to Part No. 4-826199-0, except for method of mounting to board.

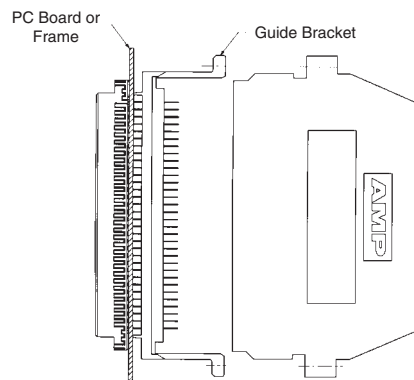
\*\* Similar to Part No. 5-826199-0, except for method of mounting to board.



For Connector	Part Number
Type C,D,F	0-826199-1



For Connector	Part Number
Type C,D	1-826199-0

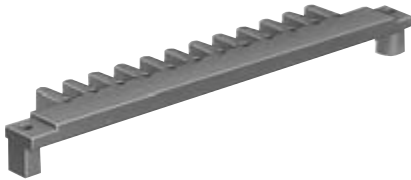


For Connector	Part Number
Type C	2-826199-8*

\* For this application use receptacle assembly with tandem spring contacts only. (Refer to page 29.)

**Keying Systems**

**Type B, C, D, F, R and Q  
Connector Keying**

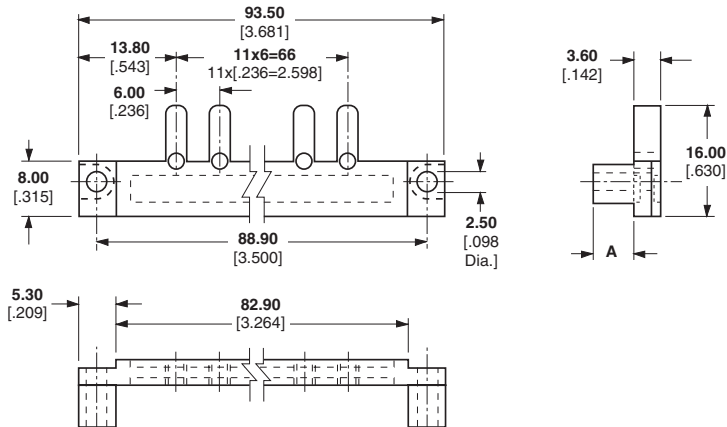


**Material**

**Housing** — Polycarbonate, red, 94V-1 rated

**Related Product Data**

**Technical Documents** — Page 74:  
Application Specification 114-9014  
Application Sketch 5LH-011.17

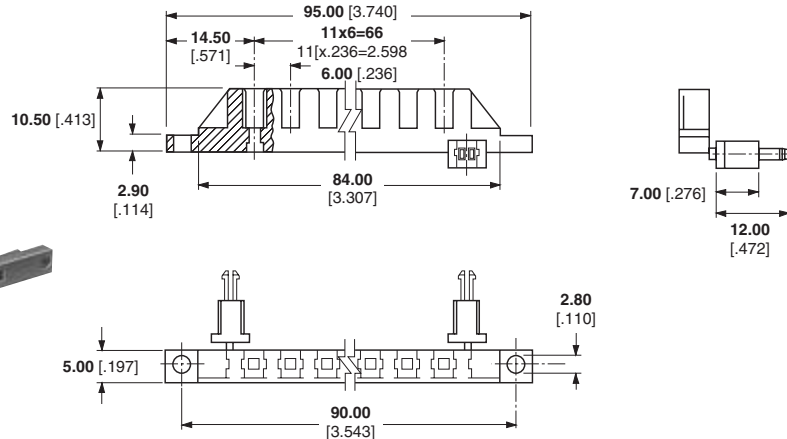
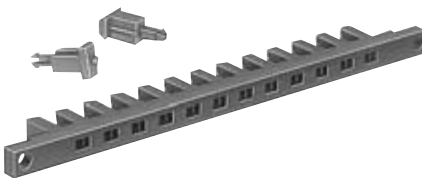


**Pin Assembly Keying Strip**

Connector Type	Dimension A	Part Number
C,D,F*,R	6.00 .236	926495-1
C,D,R	4.20 .165	926495-4

\* For Type F cable mount only.

Accessories



**Receptacle Assembly Keying Strip**

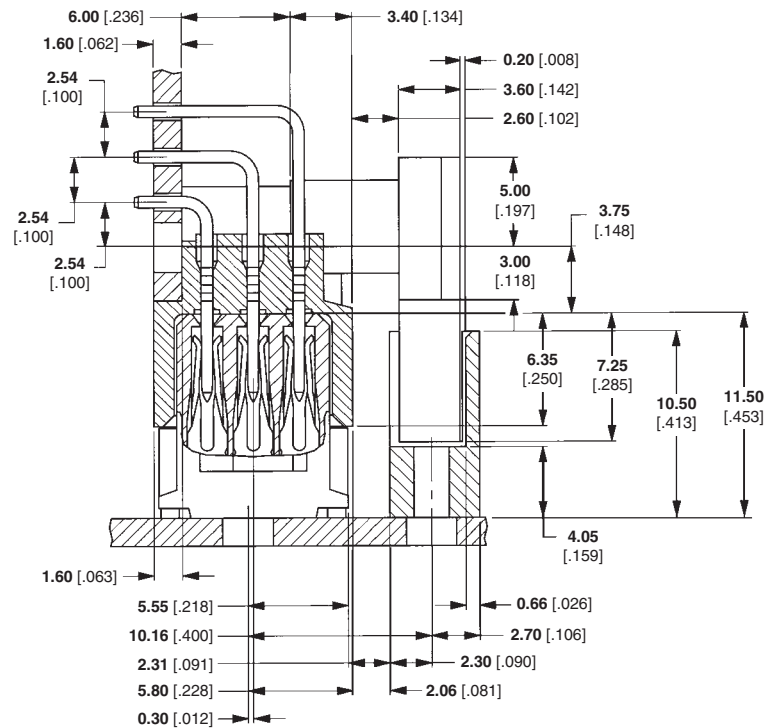
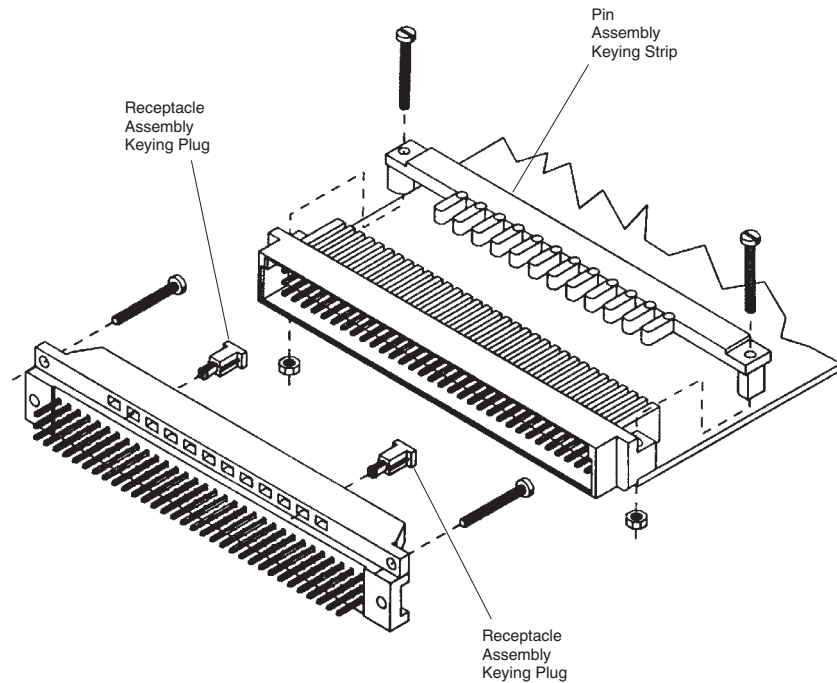
Connector Type	Part Number
B,C,D,F,Q,R	926495-2*

\* Two Keying plugs are molded to the strip, additional quantities of plugs can be ordered separately (Keying Plug Part Number 926495-3).

**Note:** Due to product design and shipping, keying plugs may be separated from strip.

**Keying Systems (Continued)**

**Type B, C, D, F, R and Q  
Connector Keying (Continued)**



**Mounting Specifications**

**The Reliable Plated-Through Hole Interconnect**

Solderless interconnections have been popular in electrical and electronic applications with worldwide success for decades. They provide reliable electrical and mechanical stability and offer applied-cost savings across the board. For PC board applications, Tyco Electronics compliant ACTION PIN contacts provide these features:

- Large gas-tight contact zone
- Reliability due to stored energy
- No damage to plated-through holes during installation
- Especially suited for multilayer PC boards
- Less costly board manufacturing due to larger hole tolerances compared to use of solid pins
- Application can be made by end-user
- Repairability — contact can be replaced in the same pin location (two repairs)
- Installation with no heat cycling of board
- Permits mass insertion by minimizing forces needed to insert pins as compared to solid pin press-fit application
- Significant applied-cost savings in many applications

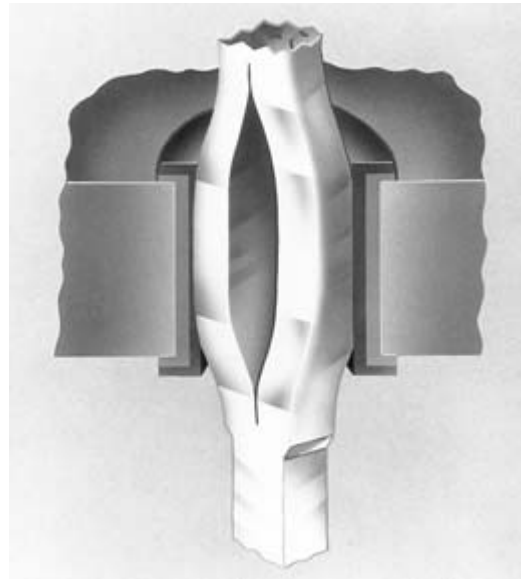
Since Tyco Electronics compliant ACTION PIN contacts do not have to be soldered, problems associated with solder are eliminated, such as:

- Faulty solder joints
- Solder fumes; contaminants are deposited on the contacts
- Solder spots; short circuits between printed circuits
- Flux residuals
- Thermal strain on printed circuit boards and components
- Degassing of plated-through holes

Solderless press-fit interconnections using the Tyco Electronics compliant pin are primarily integrated in, but not limited to, backplanes.

Solderless press-fit interconnections are used in racks, especially where connectors must be fixed on the solder side of the PC board and/or component side. In these applications, the holes for ACTION PIN contact connectors are covered during the soldering process and press-fitting is performed after soldering.

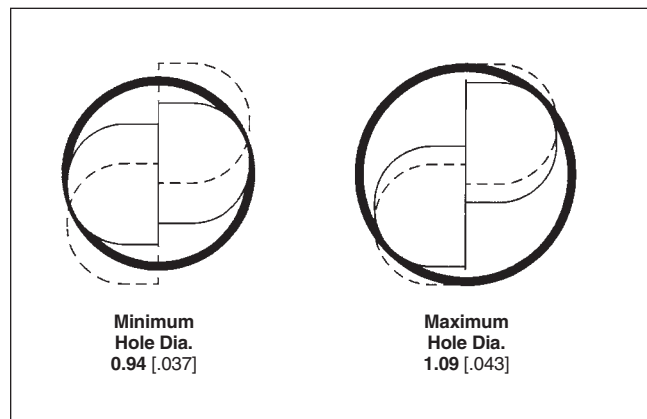
Other applications for ACTION PIN contact interconnections include PC boards that incorporate components using surface mount technology (SMT). Here, too, press-fit interconnections can be applied after soldering, thus eliminating complications associated with connectors suitable for surface mounting.



**Principle of the Tyco Electronics Compliant ACTION PIN Contact**

When a Tyco Electronics compliant ACTION PIN contact is inserted into a plated-through hole, two spring members are compressed, exerting force against the hole for a gas-tight connection. The diameter of the hole is smaller than the diagonal size of the pin (see cross-section illustration below).

The beam characteristics of the pin are designed so that a plastic, as well as an elastic, deformation takes place during insertion. The two spring members compress to different degrees to accommodate hole tolerances. The compliant pin also reduces strain on the board. With a rigid pin, the elastic strain energy is stored entirely in the board, leading to damage of the plated-through holes. With the Tyco Electronics compliant ACTION PIN contact, the residual force of the elastic deformation maintains stored energy to produce a tight contact zone between the pin and the plated-through hole. This ensures long-term electrical and mechanical reliability of the interconnection.



**Cross-Section Area of ACTION PIN Press-Fit Contact in Printed Circuit Board Holes**

**ACTION PIN Press-Fit Contacts** (Continued)

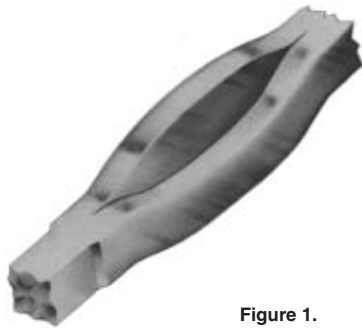


Figure 1.

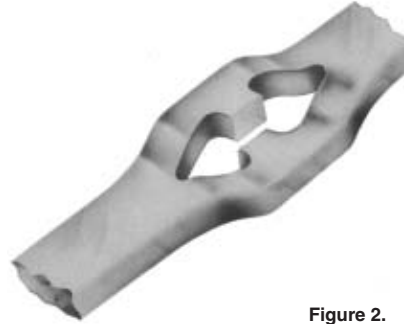


Figure 2.

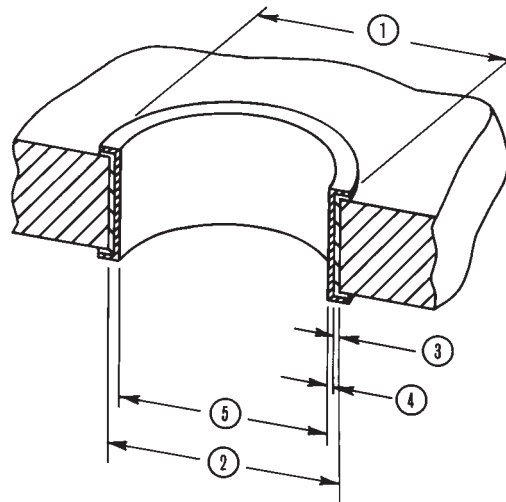
ACTION PIN contacts provide a reliable press-fit connection. Localized pressure in the interface area ensures oxide breakthrough and prevents corrosion in the harshest environments to provide a reliable connection virtually every time. Also, radial and axial distortion are controlled to meet today's standards for multilayer board applications.

ACTION PIN Thin Stock contacts extend the press-fit technology into thinner contact materials. The lower insertion force provided by this pin is ideal for applications requiring thinner contacts and/or toolless connector applications where wrap-type retention requirements are not needed.

ACTION PIN Thin Stock contacts maintain all of the interconnection properties of the ACTION PIN contact shown at the left.

**PC Board Thickness**

ACTION PIN contacts are designed for use in a variety of PC board thicknesses. However, certain ACTION PIN contacts are to be used in specific ranges of board thicknesses. To ensure optimum performance, the recommended board thicknesses provided with the connector being used must be followed.



- ① Annular Ring (See Note 1)
- ② Drilled Hole
- ③ Copper Thickness
- ④ Tin-Lead Thickness
- ⑤ Plated-Through Hole (See Note 2)

**ACTION PIN Contact/PC Board Applications**

Connectors Used With Type	Page Ref.	ACTION PIN Contact		Drilled Hole Diameter <sup>②</sup>	Plating Thicknesses		Plated-Through Hole Diameter <sup>⑤</sup>	Radial Hole Distortion	
		Configuration	Material Thickness		Copper <sup>③*</sup>	Tin-Lead <sup>④</sup>		Average	Max.
F Receptacle G Receptacle	38 41	Figure 1	<b>1.00 x 1.00</b> .039 x .039	<b>1.750±0.03</b> .0689±.001	<b>0.03-0.08</b> .001-.003	<b>0.008</b> .0003 Min.	<b>1.54-1.69</b> .061-.067	—	—
B Receptacle C Pin C Receptacle 4-Row Receptacle R Pin	16 19 24 33 54	Figure 1	<b>0.64 x 0.64</b> .025 x .025	<b>1.15±0.03</b> .0453±.001	<b>0.03-0.08</b> .001-.003	<b>0.008</b> .0003 Min.	<b>0.94-1.09</b> .037-.043	<b>0.038</b> .0015	<b>0.05</b> .002
B Receptacle C Receptacle Enhanced C Receptacle	16 23 26	Figure 2	<b>0.30 x 0.61</b> .012 x .024	<b>1.15±0.03</b> .0453±.001	<b>0.03-0.08</b> .001-.003	<b>0.008</b> .0003 Min.	<b>0.94-1.09</b> .037-.043	<b>0.038</b> .0015	<b>0.05</b> .002

\* Maximum hardness of copper layer is 150 Knoop

Notes: 1. Recommended annular ring diameter is hole diameter plus 0.51 [.020]  
2. For unplated holes, use drilled hole diameter.

*Electronics*

**Application Tooling for Eurocard Connectors with ACTION PIN Contacts**

Eurocard connectors with ACTION PIN contacts allow high speed, solderless backplane construction through reliable press-fit application. Press fitting connectors to printed circuit boards requires special seating tools which transfer application force directly to the contacts.

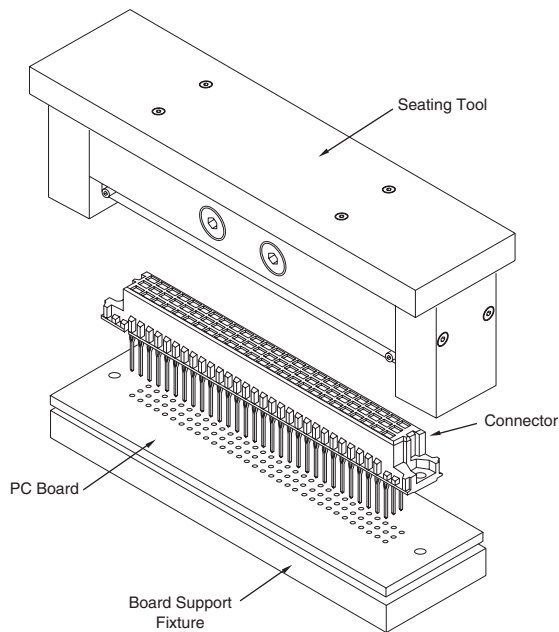
Force applied to the tool to seat the connectors can be provided by the Tyco Electronics seating machines shown below, or by commercially available arbor presses such as Greenerd 3A or 3B, which have a seating pressure capacity of 178 N [40 lb.] per contact.

Board support fixtures are used to support PC boards or backplanes while connectors are being assembled to the boards or backplanes. Board support fixtures are to be supplied by the customer in accordance with Tyco Electronics Application Specification No. 114-9014. Also, Tyco Electronics

Instruction Sheet No. 408-6927 provides Tyco Electronics recommendations for manufacturing board support fixtures. For **tooling information**, call Tyco Electronics at the numbers listed below.

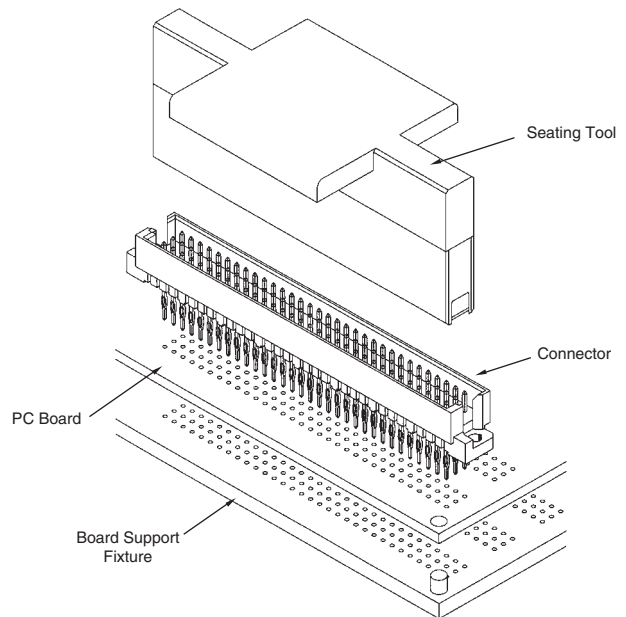
**Receptacle Assembly Seating Tools**

(See page 73 for tooling numbers)



**Pin Assembly Seating Tools**

(See page 73 for tooling numbers)





**Application Tooling for Eurocard Connectors with ACTION PIN Contacts** (Continued)

**Eurocard Connector Seating Tools**

Connector Type	Post Size	Receptacle Assembly		Pin Assembly Tools
		Standard Tools	Economy Tools	
B	<b>0.64 x 0.64</b> .025 x .025	432805-1	—	—
	<b>0.30 x 0.61</b> .012 x .024	①	①	
C	<b>0.64 x 0.64</b> .025 x .025	432583-1	535072-1	—
	<b>0.30 x 0.61</b> .012 x .024	①	①	
C (Half Size)	<b>0.64 x 0.64</b> .025 x .025	432582-1	—	—
	<b>0.30 x 0.61</b> .012 x .024	①	①	
C (128-Position)	<b>0.64 x 0.64</b> .025 x .025	432584-1	—	—
C (160-Position)	<b>0.64 x 0.64</b> .025 x .025	432585-1	—	—
F	<b>0.64 x 0.64</b> .025 x .025	①	①	—
	<b>1.00 x 1.00</b> .039 x .039			
G	<b>1.00 x 1.00</b> .039 x .039	①	①	—
M 24	<b>0.64 x 0.64</b> .025 x .025	—	—	—
M 24 CompactPCI Rcpt.	<b>0.64 x 0.64</b> .025 x .025	—	148454-1	—
M Crimp Power Contacts*	use Daniels crimping tool M 300-BT			
R	<b>0.64 x 0.64</b> .025 x .025	—	—	768211-2 768216-2 <sup>②</sup>
R (Half Size)	<b>0.64 x 0.64</b> .025 x .025	—	—	768211-1 768216-1 <sup>②</sup>
R (120-Position)	<b>0.64 x 0.64</b> .025 x .025	—	—	768211-3 768216-3 <sup>②</sup>
R (150-Position)	<b>0.64 x 0.64</b> .025 x .025	—	—	768211-4 768216-4 <sup>②</sup>

① Flat rock assembly; tooling not required  
 ② Programmable tooling for MFBL pin assemblies  
 \* See customer drawing for positioner and crimp setting.

**Eurocard Connector Removal Tools**

Connector Type	Tail Length	Removal Tool Part Number
C (96-Position, 3-Row)	≤ <b>6.35</b> .250	—
	<b>12.70</b> .500	—
	<b>17.00</b> .669	—
C (160-Position, 5-Row)	<b>4.00</b> .157	—
	<b>17.00</b> .669	—
M Male (Power Contact)	—	318813-1

CompactPCI is a trademark of PICMG-PCI Industrial Computer Manufacturers Group, Inc.

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**Technical Documents**

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The following is a list of technical documents covering the application, performance and maintenance of Eurocard Connectors and related tooling.

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

DIN 41612 Two-Part Connectors for Printed Circuit Boards  
IEC 60603-2 Connectors for Frequencies below 3 MHz for Printed Circuit Boards

**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 Setup person.

114-9014 Tyco Electronics Eurocard Connector Types B, C, M, Q, and R (Board-to-Board Application)  
114-19004 Tyco Electronics Eurocard Connector, Type F Receptacle  
114-12026 Type M Coax Contacts  
114-10014 Size VIII Power Contacts

**Instruction Sheets** provide instructions for assembling or applying the product. They are intended for the Manufacturing Assembler or Operator.

408-6732 Tyco Electronics Pneumatic Tool 91112-3  
408-6784 Tyco Electronics Eurocard Connectors (Soldering and Cleaning)  
408-6927 Design Recommendations for Printed Circuit Board Support Fixture  
408-6975 Tyco Electronics Contact Removal Tip 265964-1  
408-7777 Tyco Electronics Manual Arbor Tool 91085-2  
408-7909 Tyco Electronics Hand Tool 90301-2  
408-9027 Adapter Kit for Greenerd 3A and 3B Frame Assemblies  
408-9623 Tyco Electronics Seating Tool 535072-1  
408-9740 Tyco Electronics Seating Tools 768211-1, -2, -3 and -4  
408-9828 Hand Tool Kit 768340-1 for Connector-Specific Kits  
408-9840 Connector-Specific Kit 768352-1 for EUROLATCH Connectors  
408-9894 Programmable Tool

**Note:** Other technical documents may be available, call Tyco Electronics at the numbers listed below.

### Non-RoHS to RoHS Compliant Part Number Cross Reference

Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.
58171	58171	166678	166678	536356	5536356
91085	91085	166679	166679	536366	5536366
91112	91112	166717	166717	536385	5536385
102095	102095	166719	166719	536386	5536386
102107	102107	166733	166733	536397	5536397
106026	106026	166811	166811	536398	5536398
106739	106739	166870	166870	536405	5536405
106779	106779	166873	166873	536406	5536406
148001	5148001	167255	167255	536407	5536407
148003	5148003	167257	167257	536412	5536412
148020	5148020	167259	167259	536416	5536416
148042	5148042	169480	169480	536418	5536418
148057	5148057	174253	174253	536427	5536427
148059	5148059	174254	174254	536431	5536431
148103	5148103	174375	174375	536437	5536437
148116	5148116	174376	174376	536446	5536446
148117	5148117	215605	215605	536457	5536457
148136	5148136	215614	215614	536458	5536458
148167	5148167	215781	215781	536460	5536460
148221	5148221	215784	215784	536461	5536461
148248	5148248	215912	215912	536481	5536481
148249	5148249	215913	215913	536484	5536484
148250	5148250	215950	215950	536485	5536485
148292	5148292	216398	216398	536486	5536486
148296	5148296	432583	432583	536489	5536489
148304	5148304	432584	432584	536490	5536490
148330	5148330	432585	432585	536491	5536491
148360	5148360	432805	432805	536492	5536492
148363	5148363	533236	533236	536493	5536493
148364	5148364	534611	534611	536742	5536742
148375	5148375	535032	535032	536744	5536744
148384	5148384	535034	535034	650404	5650404
148407	5148407	535043	535043	650405	5650405
148411	5148411	535056	535056	650406	5650406
148412	5148412	535059	535059	650408	5650408
148413	5148413	535068	535068	650437	5650437
148414	5148414	535070	535070	650459	5650459
148417	5148417	535071	535071	650461	5650461
148418	5148418	535072	535072	650462	5650462
148420	5148420	535074	535074	650466	5650466
148423	5148423	535079	535079	650470	5650470
148427	5148427	535080	535080	650473	5650473
164045	164045	535089	535089	650477	5650477
164306	164306	535090	535090	650478	5650478
166459	166459	535091	535091	650479	5650479
166460	166460	535098	535098	650858	5650858
166461	166461	536010	536010	650859	5650859
166467	166467	536011	536011	650860	5650860
166477	166477	536019	536019	650861	5650861
166479	166479	536052	536052	650864	5650864
166589	166589	536053	536053	650865	5650865
166570	166570	536067	536067	650868	5650868
166594	166594	536096	536096	650870	5650870
166632	166632	536098	536098	650871	5650871
166633	166633	536146	536146	650874	5650874
166634	166634	536148	536148	650875	5650875
166635	166635	536149	536149	650877	5650877
166636	166636	536152	536152	650889	5650889
166645	166645	536153	536153	650893	5650893
166648	166648	536154	536154	650895	5650895
166649	166649	536155	536155	650896	5650896

**Non-RoHS to RoHS Compliant Part Number Cross Reference** (Continued)

Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.
650897	5650897	650936	5650936	746603	746603
650906	5650906	650945	5650945	768211	768211
650907	5650907	650946	5650946	768216	768216
650908	5650908	650947	5650947	803880	803880
650909	5650909	650948	5650948	814700	814700
650910	5650910	650949	5650949	826196	826196
650911	5650911	650951	5650951	826198	826198
650912	5650912	650956	5650956	826199	826199
650913	5650913	650959	5650959	827107	827107
650914	5650914	650963	5650963	827788	827788
650915	5650915	650978	5650978	827803	827803
650916	5650916	650963	5650963	870089	870089
650917	5650917	650978	5650978	925486	925486
650918	5650918	650983	5650983	926040	926040
650919	5650919	650987	5650987	926495	926495
650921	5650921	650988	5650988	1393589	1393589
650922	5650922	650992	5650992	1393644	1393644
650923	5650923	650998	5650998	1393662	1393662
650924	5650924	658033	658033	1393668	1393668
650930	5650930	658096	658096	1392019	1392019
650933	5650933	658166	658166	1392020	1392020
650934	5650934	658167	658167		
650935	5650935	658169	658169		

**RoHS Compliant to Non-RoHS Part Number Cross Reference**

RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.
58171	58171	658169	658169	5535059	535059
91085	91085	746603	746603	5535068	535068
91112	91112	768211	768211	5535070	535070
102095	102095	768216	768216	5535071	535071
102107	102107	803880	803880	5535072	535072
106026	106026	814700	814700	5535074	535074
106739	106739	826196	826196	5535079	535079
106779	106779	826198	826198	5535080	535080
164045	164045	826199	826199	5535089	535089
164306	164306	827107	827107	5535090	535090
166459	166459	827788	827788	5535091	535091
166460	166460	827803	827803	5535098	535098
166461	166461	870089	870089	5536010	536010
166467	166467	925486	925486	5536011	536011
166477	166477	926040	926040	5536052	536052
166479	166479	926495	926495	5536053	536053
166570	166570	1392019	1392019	5536067	536067
166589	166589	1392020	1392020	5536096	536096
166594	166594	1393589	1393589	5536098	536098
166632	166632	1393644	1393644	5536146	536146
166633	166633	1393662	1393662	5536148	536148
166634	166634	1393668	1393668	5536149	536149
166635	166635	5148001	148001	5536152	536152
166636	166636	5148003	148003	5536153	536153
166645	166645	5148020	148020	5536154	536154
166648	166648	5148042	148042	5536155	536155
166649	166649	5148057	148057	5536356	536356
166678	166678	5148059	148059	5536366	536366
166679	166679	5148103	148103	5536385	536385
166717	166717	5148116	148116	5536386	536386
166719	166719	5148117	148117	5536397	536397
166733	166733	5148136	148136	5536398	536398
166811	166811	5148167	148167	5536405	536405
166870	166870	5148221	148221	5536406	536406
166873	166873	5148248	148248	5536407	536407
167255	167255	5148249	148249	5536412	536412
167257	167257	5148250	148250	5536416	536416
167259	167259	5148292	148292	5536418	536418
169480	169480	5148296	148296	5536427	536427
174253	174253	5148304	148304	5536431	536431
174254	174254	5148330	148330	5536437	536437
174375	174375	5148360	148360	5536446	536446
174376	174376	5148363	148363	5536457	536457
215605	215605	5148364	148364	5536458	536458
215614	215614	5148375	148375	5536460	536460
215781	215781	5148384	148384	5536461	536461
215784	215784	5148407	148407	5536481	536481
215912	215912	5148411	148411	5536484	536484
215913	215913	5148412	148412	5536485	536485
215950	215950	5148413	148413	5536486	536486
216398	216398	5148414	148414	5536489	536489
432583	432583	5148417	148417	5536490	536490
432584	432584	5148418	148418	5536491	536491
432585	432585	5148420	148420	5536492	536492
432805	432805	5148423	148423	5536493	536493
533236	533236	5148427	148427	5536742	536742
534611	534611	5535019	536019	5536744	536744
658033	658033	5535032	535032	5650404	650404
658096	658096	5535034	535034	5650405	650405
658166	658166	5535043	535043	5650406	650406
658167	658167	5535056	535056	5650408	650408

**RoHS Compliant to Non-RoHS Part Number Cross Reference** (Continued)

RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.	RoHS Compliant Part No.	Non-RoHS Part No.
5650437	650437	5650893	650893	5650933	650933
5650459	650459	5650895	650895	5650934	650934
5650461	650461	5650896	650896	5650935	650935
5650462	650462	5650897	650897	5650936	650936
5650466	650466	5650906	650906	5650945	650945
5650470	650470	5650907	650907	5650946	650946
5650473	650473	5650908	650908	5650947	650947
5650477	650477	5650909	650909	5650948	650948
5650478	650478	5650910	650910	5650949	650949
5650479	650479	5650911	650911	5650951	650951
5650858	650858	5650912	650912	5650956	650956
5650859	650859	5650913	650913	5650959	650959
5650860	650860	5650914	650914	5650963	650963
5650861	650861	5650915	650915	5650963	650963
5650864	650864	5650916	650916	5650978	650978
5650865	650865	5650917	650917	5650978	650978
5650868	650868	5650918	650918	5650983	650983
5650870	650870	5650919	650919	5650987	650987
5650871	650871	5650921	650921	5650988	650988
5650874	650874	5650922	650922	5650992	650992
5650875	650875	5650923	650923	5650998	650998
5650877	650877	5650924	650924		
5650889	650889	5650930	650930		

Part Number Index

**Note:** This index lists all cataloged parts by base no. only. Complete part nos. (with prefixes and/or suffixes) are shown on the page(s) indicated.

Part No.	Page	Part No.	Page	Part No.	Page
102095	28	166717	37	536385	14
102107	28	166719	37	536386	14
106276	19	166722	29	536397	21
106739	32	166733	37	536398	22
106779	35	166811	30	536405	17
148001	22	166870	30	536406	17
148003	18	166873	30	536407	17
148020	17	166951	37	536412	20
148057	24	167041	29	536416	17
148059	24	167042	29	536418	20
148103	13	167255	30	536427	53
148116	17	167257	30	536437	13
148167	24	167259	30	536446	15
148221	49	167771	41	536457	15
148242	56	174253	51	536458	15
148248	48	174254	50	536461	15
148292	55	174375	64	536481	20
148295	55	174376	64	536484	21
148296	55	188250	36	536485	21
148304	13	215605	19	536489	21
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**Managed Solutions to System Design**

Tyco Electronics Interconnections Systems is a new service responding to the growing market requirement for high performance in systems packaging and interconnection. Today's high-speed logic makes proper packaging and interconnection an essential part of system design. Competitive pressures mean that designs must be completed faster than ever. But even the best logical design must be packaged cost-effectively while maintaining the highest levels of performance. And the design is complicated by packaging constraints, the need for transmission-line rules, and EMI/EMC concerns. Tyco Electronics can help make your design a reality — fast and cost effectively.

**Design Analysis and Support**

We offer you a structured approach to system design. Our capabilities range from initial waveform analysis and circuit verification through first-article fabrication and follow-on production. Our comprehensive, managed approach to system design encompasses a range of electrical and mechanical functions that help reduce your logic to a cost-effective, packaged system the first time.

We use accurate device models and sophisticated computer simulations to characterize your design and analyze all aspects of your design. Our capabilities include high-speed signal propagation, interconnection analysis, backplane design, power and thermal distribution, and mechanical fabrication.

Computer simulation allows you to know how your system will operate before the first prototype is built. For example, our dynamic device models provide more precise characterization of waveforms than typical linear models. Aberrations in risetime, which may cause added noise, catastrophic transients, and delays, are fully accounted for. Our experience in interconnection and backplane design allows us to recommend the best approach, choosing from

microstrip, stripline, dual stripline, differential-pair, and other controlled-impedance techniques.

**Reduce Costs**

Tyco Electronics helps you achieve a cost-effective, manufacturable design — the first time, without costly design iterations. We can help you with first-article fabrication and even follow-up production. By simultaneously considering the electrical, mechanical, power, thermal, and manufacturing issues, we help your design evolve quickly into a manufacturable product.

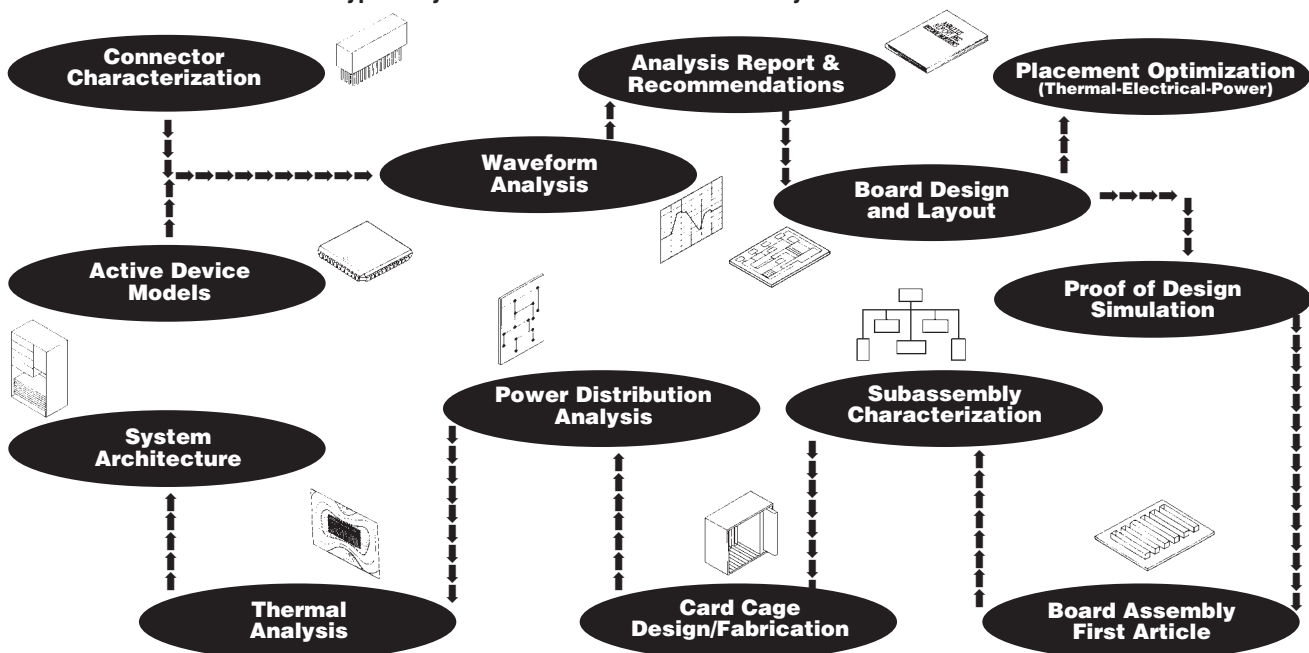
**Typical Capabilities**

- Critical Net Simulation
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- Timing Verification
- Net Topography
- System Impedance
- Layout Rules
- EMI/EMC Analysis
- Backplane Layout
- Board Layout
- Thermal Analysis
- Power Distribution Analysis
- Connector and Cable Recommendations
- I/O Assignments
- First Article Fabrication and Assembly
- Production

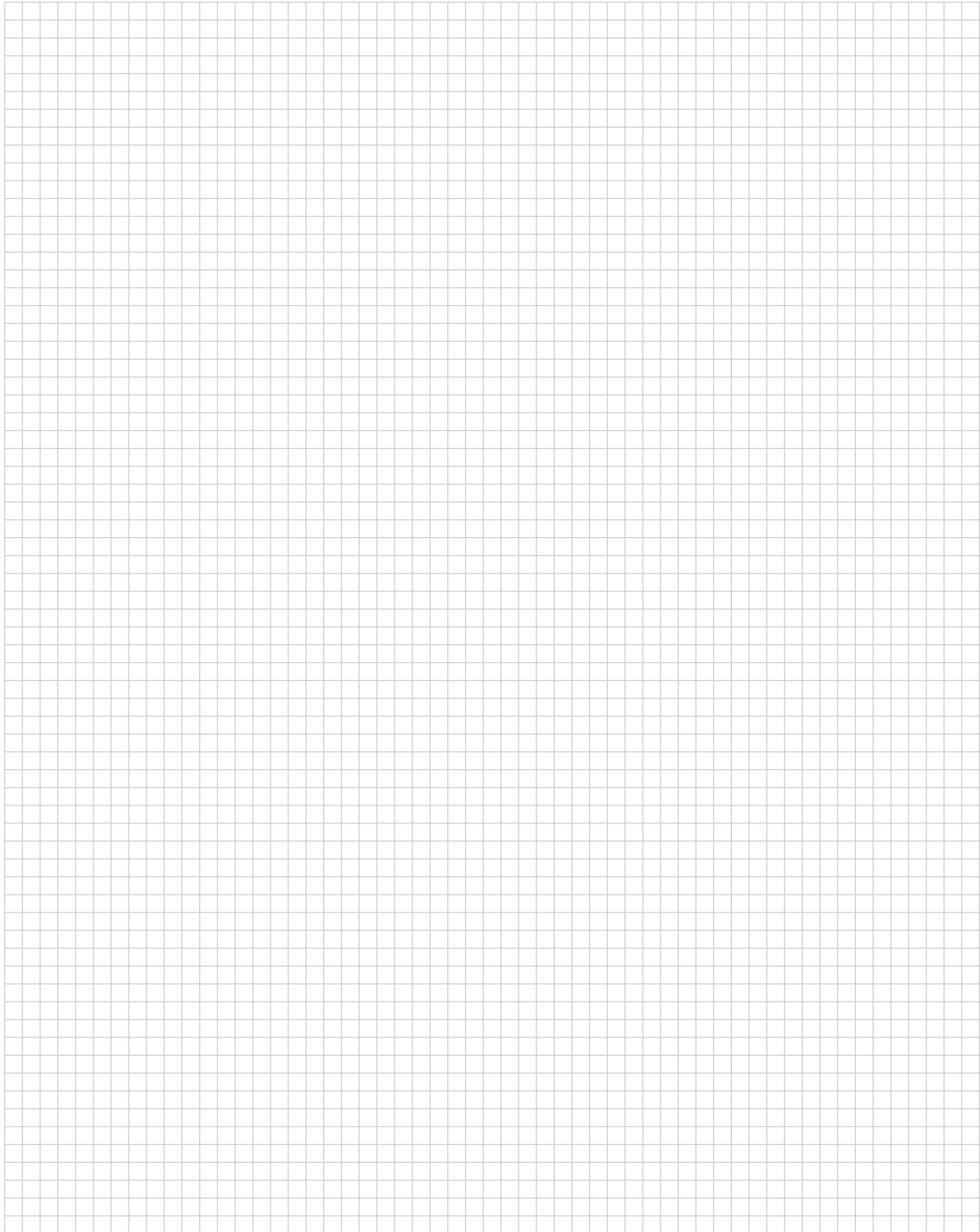
**Extend Your Design Team**

Tyco Electronics is your single source for design analysis and hardware design and fabrication. Our talented Interconnection Systems Engineers, backed by comprehensive computer models and analysis programs and by the technological resources of Tyco Electronics, carefully evaluate all aspects of your design. Every recommendation — from selecting an impedance to fabricating a card cage — contributes to proper system performance. Put Tyco Electronics Interconnection Systems on your design team and let us help you implement your design quickly and efficiently. Call Tyco Electronics at the numbers listed below for answers to your questions and arrange a visit by the Tyco Electronics Interconnection Systems team.

**Typical Tyco Electronics Interconnection Systems Services**



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