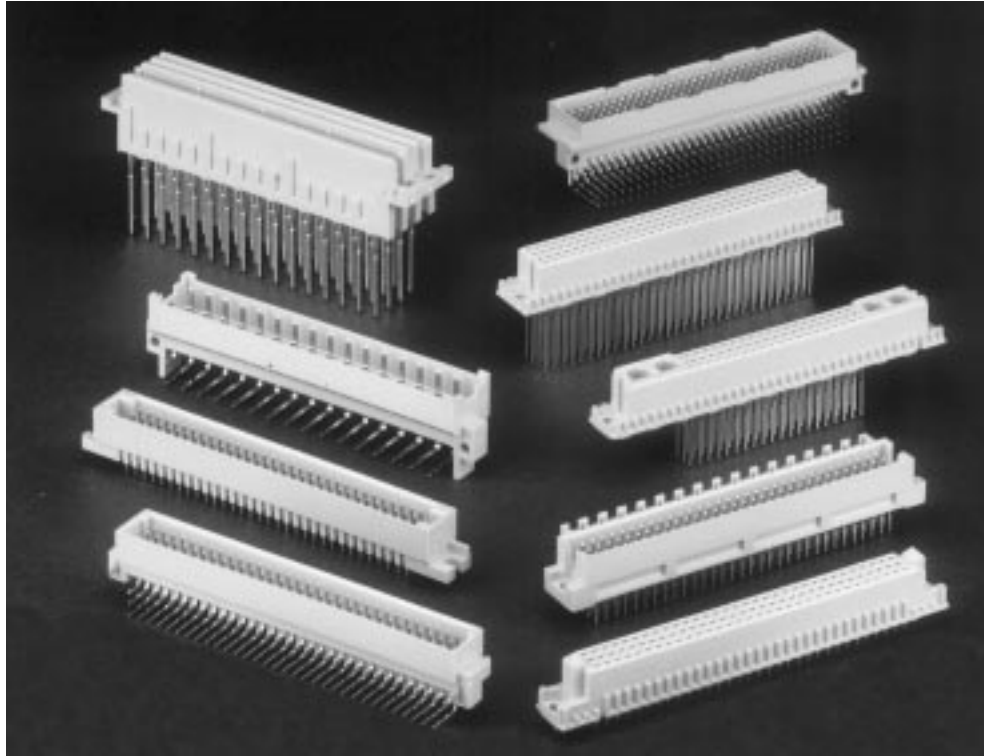


Product Facts

- Meets DIN 41612 and IEC 603-2
- Polarized housings
- Standard DIN sizes as well as half sizes, and expanded sizes
- AMP ACTION PIN post assemblies for reliability and economical motherboard assembly
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476 
- Certified by Canadian Standards Association, File No. LR 7189 



Electrical Data:

- Current Rating (signal contacts)** — 1.5 Amperes
- 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

AMP Eurocard Connectors meet DIN 41612 and IEC 603-2 specifications.

The application for the Eurocard connectors is a two-piece backplane connector for low to mid range networking gear.

These connectors are flame retardant and are available in Types C, F, M, and R. They have various solder post lengths, and selective contact loading.

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	AMP Eurocard Connectors	Part Numbers		Page Numbers
		Pin	Receptacle	
VMEbus	Type C, 96 Position	650473-5	535043-5	3091, 3092
VME64X	160 Position	—	148452-5 1-148495-5	3096

For complete product information, order Catalog 1307515

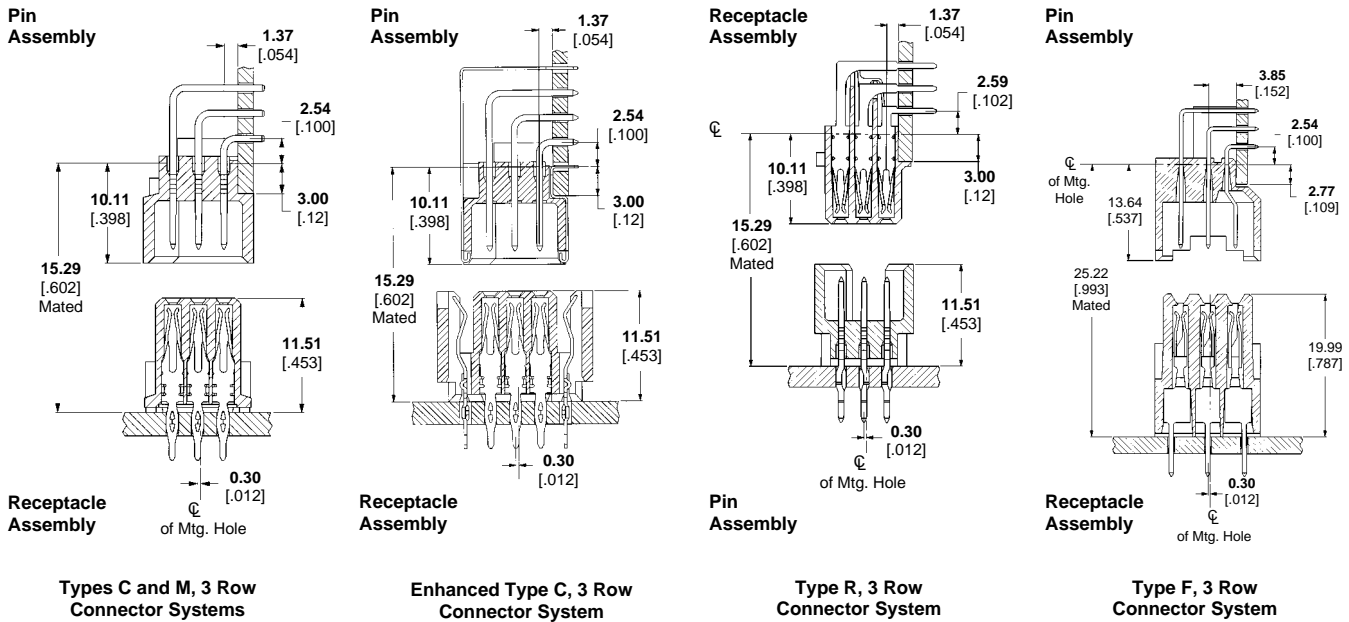
DIN 41612 Performance Levels

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.

	Level I	Level II	Level III
Test Batch P			
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
Test Batch AP			
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 ² (50G)	—	—
Acceleration	980 m/s ²	—	—
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
Test Batch BP			
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 SO ₂	4 days SO ₂	—
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]	—	—
Test Batch CP			
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	—
Test Batch DP			
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	—
Test Batch EP			
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	—	—

For complete product information, order Catalog 1307515

Overview of Eurocard Connector System



Types C and M, 3 Row Connector Systems

Enhanced Type C, 3 Row Connector System

Type R, 3 Row Connector System

Type F, 3 Row Connector System

	Type C/Enhanced Type C (Signal Contacts)** /Type M (Signal Contacts)	Type R	Type F
Number of Positions (Max.)	96	96	48
Row Levels	A, B & C A & C	A, B & C	Z, B, & D
Grid in inches fully loaded (Pitch and row distance)	Receptacle Assembly	2.54 x 2.54 [.100 x .100]	5.08 X 5.08 [.200 X .200]
	Pin Assembly	2.54 x 2.54 [.100 x .100]	5.08 X 2.54 [.200 X .100]†
Minimum adjacent mounting space required	12.7 [.500]	12.7 [5.00]	15.2 [.600]
Performance Specifications:			
Current Rating	Per DIN 41612*		Per DIN 41612*
Voltage Rating	250 VAC	250 VAC	250 VAC
Dielectric Rating	1000 VAC/1.55 KV maximum	1000 VAC	1.55 KV max.
Contact Resistance	15 milliohms initial at 100 ma and 50 mv, open circuit	15 milliohms initial at 100 ma and 50 mv, open circuit	15 milliohms
Insulation Resistance	10 ⁶ megohms after temperature cycling environment		10 ⁶ megohms after temperature cycling environment
Temperature Rating	-55°C to +125°C, except EUROLATCH Connectors, +105°C max.		-55°C to +125°C
Durability	Per DIN 41612, Level I, II or III		Per DIN 41612, Level I, II or III
Mating Force	Less than 0.94 N [3.4 oz] Avg. per contact		Less than 0.94 N [3.4 oz] Avg. per contact
Unmating Force	0.15 N [.54 oz] min. per contact after three mating cycles		0.15 N [.54 oz] min. per contact after three mating cycles

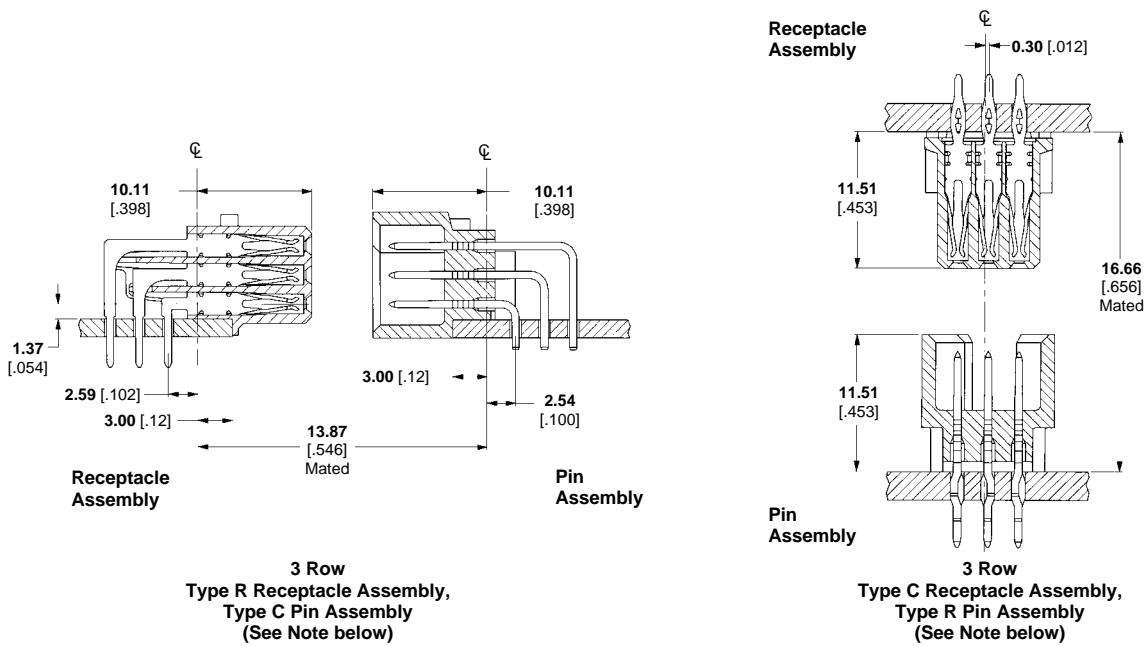
*See derating curve on next page.

**For additional electrical data, see page 3085.

†At solder side.

For complete product information, order Catalog 1307515

Mixed Styles



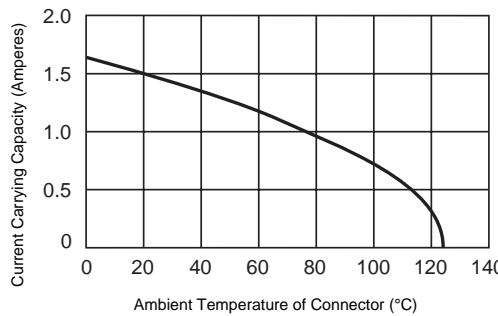
Note: When connector styles are mixed (Types C and R), the connector circuit numbers will not match; for example, position A1 of the pin assembly will mate with position A32 of the receptacle assembly.

Current Carrying Capacity and Mating Conditions

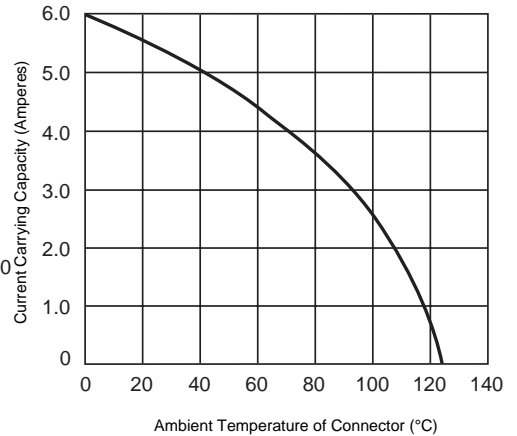
Current Carrying Capacity (All Contacts Energized in Housing)

Additional derating is recommended when paralleling contacts for power.

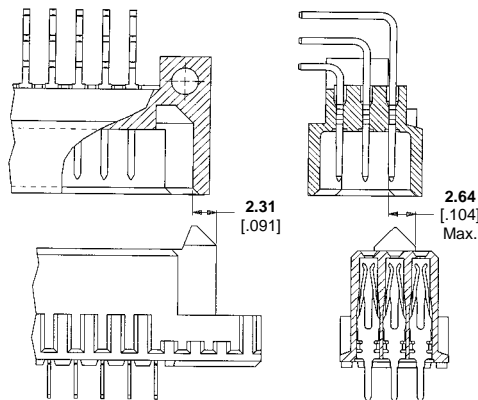
Types C and R per DIN 41612



Type F per DIN 41612



Mating Conditions

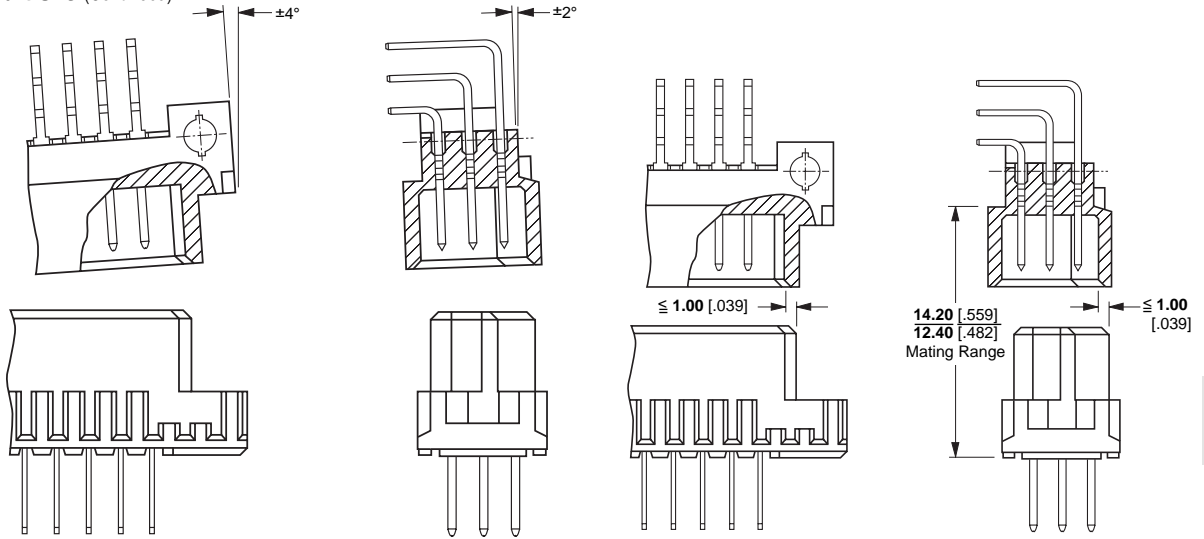


Eurocard Connector with Guide Features

For complete product information, order Catalog 1307515

Current Carrying Capacity and Mating Conditions

Mating Conditions (Continued)



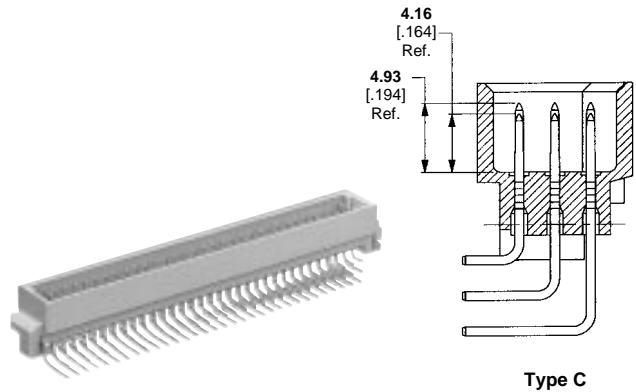
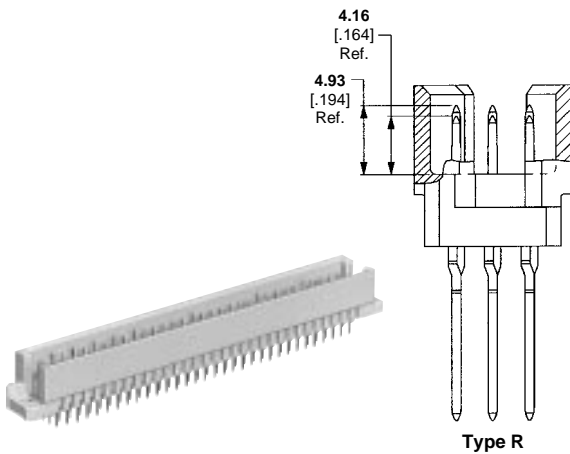
MFBL (Make First/Break Last) Connector System

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.

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 the 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 AMP Instruction Sheet 408-9894.



For complete product information, order Catalog 1307515

MFBL (Make First/Break Last) Connector System

Type C Pin Assemblies

No. of Positions	Rows Loaded*	DIN Level	Part Numbers*
96	—	II	536437
			148123**
			536366 ¹
			148330* ²
48	—	II	148019
			536751 ¹
120	—	II	148002
			148032 ¹

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

**Three levels of sequencing.

¹ With Boardlocks

² Reverse Polarized

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

No. 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)

No. of Positions	Rows Loaded	DIN Level	Part Numbers
96	A,B,C	II	536019-5
64	A,C	II	536098-5
48	A,B,C	II	536092-5
32	A,C	II	536100-5
120	A,B,C	II	536094-5
150	A,B,C	II	536096-5

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

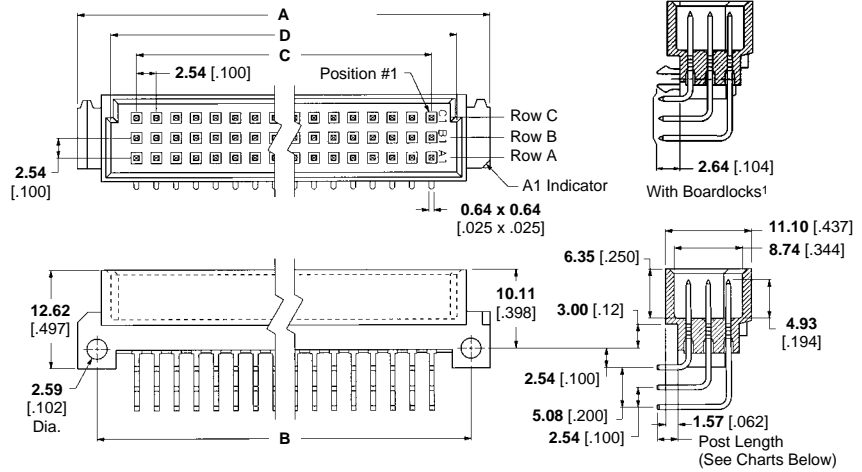
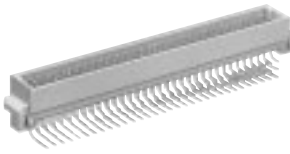
No. of Positions	Rows Loaded	DIN Level	Part Numbers
48	A,B,C	II	148472-4
64	A,C	II	148553-4
96	A,B,C	II	148304-4
120	A,B,C	II	148389-4
150	A,B,C	II	148306-4

Type R Pin Assemblies, 13.23 [.521] ACTION PIN (Press-Fit) Post Length, Programmable (for 2.36 [.093] Min. Thick PC Board)

No. of Positions	Rows Loaded	DIN Level	Part Numbers
96	A,B,C	II	536067-5
64	A,C	II	536099-5
48	A,B,C	II	536093-5
32	A,C	II	536101-5
120	A,B,C	II	536095-5
150	A,B,C	II	536097-5

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts and Boardlocks — Brass

DIN II Plating — Meets performance requirements of DIN Level II.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3092, 3102, 3103

Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Application Specification
114-9014

Instruction Sheet
408-6784

Standard Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers		
		A	B	C	D		2.64 [.104] Post Length	3.30 [.130] Post Length	4.57 [.180] Post Length
96	A,B,C	93.98 3.700	88.90 3.500	78.74 3.100	85.29 3.358	II	650473-5	650947-5	148116-5
							650913-5 ¹	536405-5 ¹	—
							536010-5 ²	536742-5 ²	—
							536416-5 ^{1,2}	—	—
64	A,C	93.98 3.700	88.90 3.500	78.74 3.100	85.29 3.358	II	650473-9	650947-9	—
							650945-5	650951-5	148117-5
							536356-5 ¹	536406-5 ¹	—
							536011-5 ²	—	—
						III	650945-9	—	—
							148511-5 ^{1,2}	—	—

¹ With Boardlocks
² High Temperature Housing

Half Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		2.64 [.104] Post Length	3.30 [.130] Post Length
48	A,B,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	II	650478-5	650948-5
							650916-5 ¹	536407-5 ¹
							536012-5 ²	—
							148020-5 ^{1,2}	—
32	A,C	53.34 2.100	48.26 1.900	38.10 1.500	44.65 1.758	II	650478-9	—
							640946-5	—
							650978-5 ¹	536408-5
							536013-5 ²	—

¹ With Boardlocks
² High Temperature Housing

Expanded Size

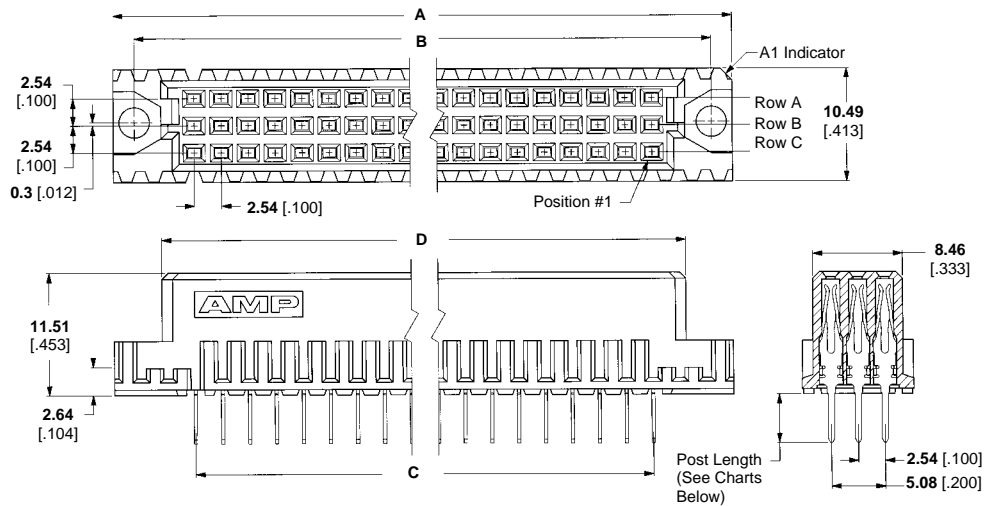
No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		2.64 [.104] Post Length	3.30 [.130] Post Length
120	A,B,C	114.30 4.500	109.22 4.300	99.06 3.900	105.61 4.158	II	650906-5	650949-5
							650914-5 ¹	536409-5 ¹
							536413-5 ^{1,2}	536741-5 ²
							—	650949-9
150	A,B,C	139.70 5.500	134.62 5.300	124.46 4.900	130.01 5.158	II	650907-5	650950-5
							650915-5 ¹	536410-5 ¹
							536414-5 ^{1,2}	—

¹ With Boardlocks
² High Temperature Housing

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

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3091, 3102, 3103

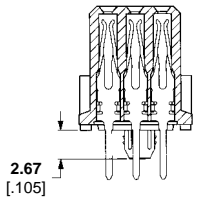
Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Application Specification
114-9014

Instruction Sheet
408-6784



With Boardlocks¹

Standard Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers		
		A	B	C	D		2.49 [.098] Post Length	3.30 [.130] Post Length	4.57 [.180] Post Length
96	A,B,C	93.98	90.00	78.74	85.00	II	535089-5	535090-5	535043-5
		3.700	3.543	3.100	3.346		—	535090-4 ²	535043-4 ²
		—	—	—	—	III	536418-5 ¹	650963-5 ¹	536412-5 ¹
		—	—	—	—	—	—	650963-4 ^{2,1}	536412-4 ^{2,1}
64	A,C	93.98	90.00	78.74	85.00	II	535089-9	535090-9	535043-9
		3.700	3.543	3.100	3.346		—	650458-5	650956-5
		—	—	—	—	III	536481-5 ¹	650983-5	536756-5
—	—	—	—	—	—	650458-9	—	—	

¹ With Boardlocks

² Contact Plating: .000030 Gold in mating area, Tin Lead on tails, All over .000050 Nickel.

Half Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers		
		A	B	C	D		2.49 [.098] Post Length	3.30 [.130] Post Length	4.57 [.180] Post Length
48	A,B,C	53.34	49.37	38.10	44.35	II	535091-5	535070-5	535071-5
		2.100	1.944	1.500	1.746		—	148521-5	535070-4 ²
		—	—	—	—	III	536397-5 ¹	536484-5 ¹	536485-5 ¹
		—	—	—	—	—	—	535091-9	—
32	A,C	53.34	49.37	38.10	44.35	II	650459-5	—	650466-5
		2.100	1.944	1.500	1.746		—	—	650466-4 ²
		—	—	—	—	—	—	536486-5 ¹	536487-5 ¹

¹ With Boardlocks

² Contact Plating: .000030 Gold in mating area, Tin Lead on tails, All over .000050 Nickel.

Expanded Size

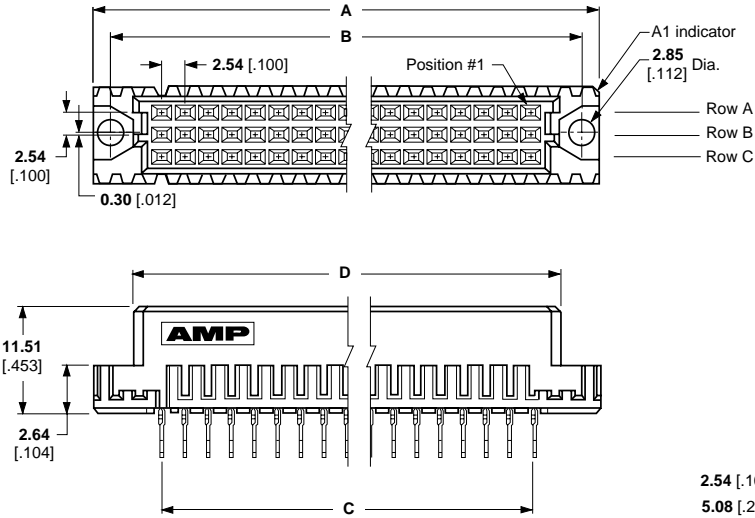
No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers		
		A	B	C	D		2.49 [.098] Post Length	3.30 [.130] Post Length	4.57 [.180] Post Length
120	A,B,C	114.30	110.31	99.06	105.31	II	535097-5	535098-5	535099-5
		4.500	4.343	3.900	4.146		—	536489-5 ¹	536494-5 ¹
		—	—	—	—	III	535097-9	535098-9	—
		—	—	—	—	—	—	650404-5	650405-5
150	A,B,C	139.70	135.71	124.46	130.71	II	536491-5 ¹	536492-5 ¹	536493-5 ¹
		5.500	5.343	4.900	5.146		—	—	—

¹ With Boardlocks

² Contact Plating: .000030 Gold in mating area, Tin Lead on tails, All over .000050 Nickel.

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3091, 3101

Application Tooling — pages 3109

Technical Documents:

DIN Specification 41612

IEC Specification 603-2

Application Specification 114-9014

Instruction Sheet 408-6927

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers
		A	B	C	D		
96	A,B,C	93.98	90.00	78.74	85.00	II	535032-5
		3.700	3.543	3.100	3.346		535032-42
							535056-51
64	A,C	93.98	90.00	78.74	85.00	II	535056-42
		3.700	3.543	3.100	3.346		535032-9
							535059-5
					III	535059-42	
					III	535059-9	

¹ Without mounting ears.

² Contact Plating: .000030 Gold in mating area, Tin Lead on tails, All over .000050 Nickel.

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers
		A	B	C	D		
48	A,B,C	53.34	49.37	38.10	44.35	II	535034-5
		2.100	1.944	1.500	1.746		535034-42
							535034-9
32	A,C	53.34	49.37	38.10	44.35	II	535068-5
		2.100	1.944	1.500	1.746		

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

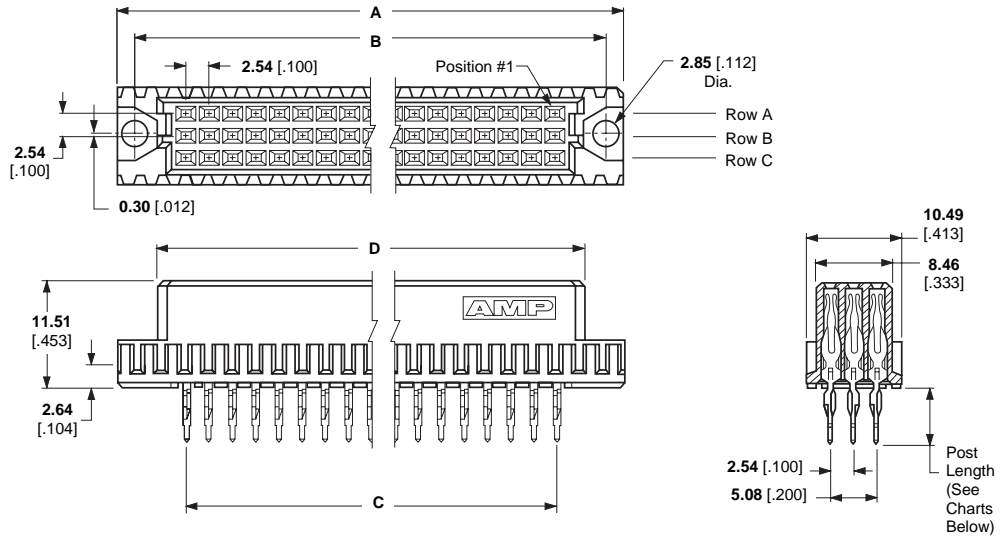
No. r of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers
		A	B	C	D		
120	A,B,C	114.30	110.31	99.06	105.31	II	535079-5
		4.500	4.343	3.900	4.146		
150	A,B,C	139.70	135.71	124.46	130.71	II	535080-5
		5.500	5.343	4.900	5.146		

Note: Connectors on this page are toolless (flat rock).

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

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3091, 3101, 3102

Application Tooling — page 3109

Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Application Specification
114-9014

Instruction Sheets
408-6927, 408-9623

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		13 [.512] Post Length	17 [.669] Post Length
96	A,B,C	95.00	90.00	78.74	85.00	II	215912-4 ³	215614-4 ³
		3.740	3.543	3.100	3.346		1-215912-41.3	1-215614-41.3
							148057-5 ²	148059-5 ²
	A,C					III	1-148057-51.2	1-148059-51.2
							1-148057-41.2	—
							215912-8	—
64	A,C	95.00	90.00	78.74	85.00	II	1-215912-8 ¹	1-215614-8 ¹
		3.740	3.543	3.100	3.346		215913-4 ³	215781-4 ³
							148167-5	—
	A,B,C					III	1-215913-41.3	1-215781-41.3
							1-148167-51.2	—
							1-148167-41.2	—
48	A, B, C	53.34	49.37	38.10	44.35	—	215913-8	215781-8
		2.100	1.944	1.500	1.746		1-215913-8 ¹	1-215781-8 ¹

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		13 [.512] Post Length	17 [.669] Post Length
96	A,B,C	95.00	90.00	78.74	85.00	II	215950-4 ³	215783-4 ³
		3.740	3.543	3.100	3.346		1-215950-41.3	1-215783-41.3
							148057-5 ²	148059-5 ²
	A,C					III	1-148057-51.2	1-148059-51.2
							1-148057-4 ¹	—
							215950-8	215783-8
64	A,C	95.00	90.00	78.74	85.00	II	1-215950-8 ¹	1-215783-8 ¹
		3.740	3.543	3.100	3.346		215951-4 ³	—
							148167-5 ²	—
	A,B,C					III	1-215951-4 ¹	—
							1-148167-51.2	—
							1-148167-41.2,3	—
48	A, B, C	53.34	49.37	38.10	44.35	—	215951-8	215784-8
		2.100	1.944	1.500	1.746		1-215951-8 ¹	1-215784-8 ¹

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

² Toolless (flat rock) connectors.

³ .000030 Gold plating in contact mating area, Tin Lead on tails (unless otherwise specified), all over .000050 Nickel.

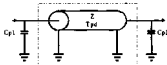
Note: Seating tool required, unless specified otherwise.

For complete product information, order Catalog 1307515

Type C Enhanced VME64X (J1, J2)

Product Facts

- Compatible with existing type C DIN 41612 connectors and VME bus applications
- Additional low inductance, low resistance grounds
- Lowers common mode noise
- 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



AMP Single Line and Multi Line Models are available for Eurocard (DIN) connectors at www.amp.com/simulation, or by requesting CD#1307568.

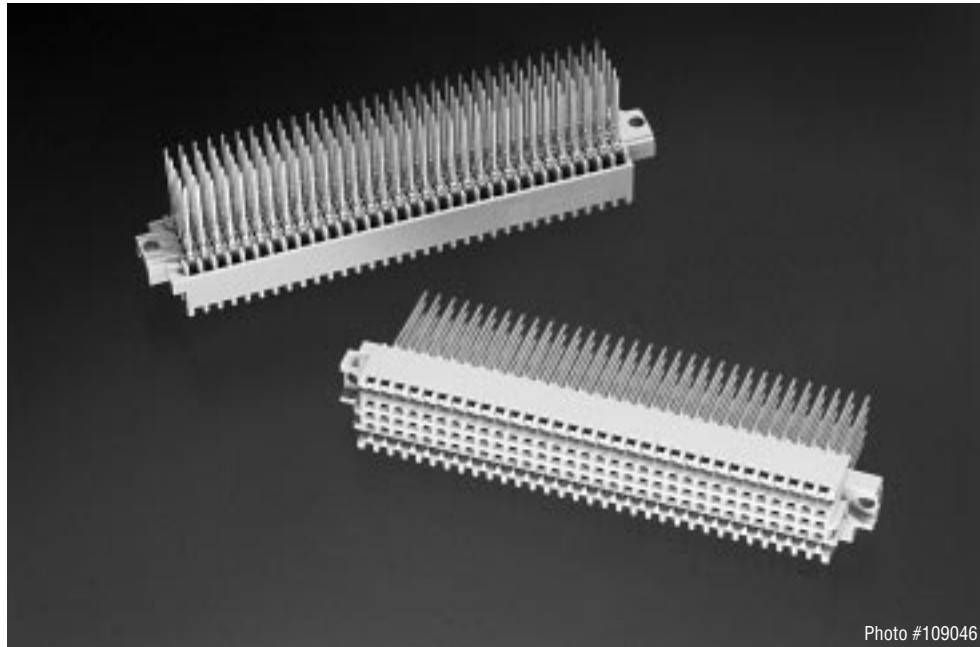


Photo #109046

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 daughter cards 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.

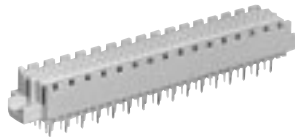
The Enhanced Eurocard connector is cost competitive and provides superior electrical performance, while maintaining the downward compatibility to standard VME daughter cards.

The Enhanced Eurocard connector is made to

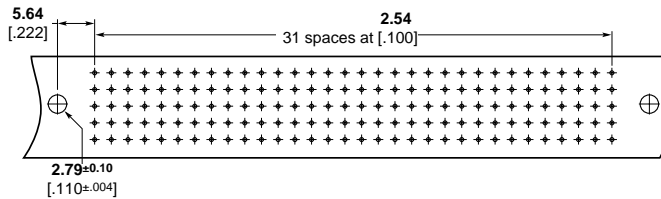
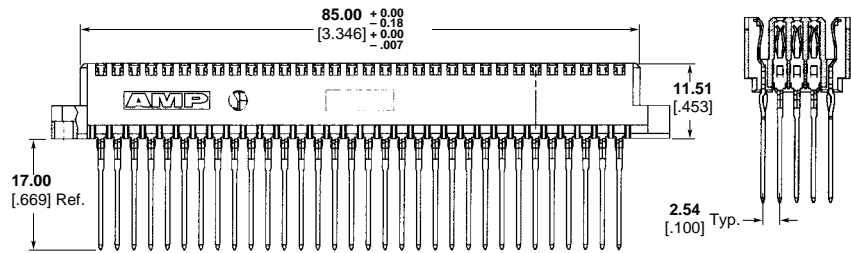
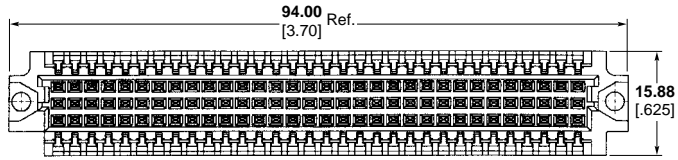
upgrade existing systems with minimal design change. They contain the make-first/break-last contacts which provide ESD protection. The pin headers feature high temperature plastic housings and are compatible with vapor phase and IR solder reflow process. The Enhanced Eurocard connectors also feature boardlocks that provide hold-down during soldering process.

For complete product information, order Catalog 1307515

Type C Enhanced Vertical Receptacle Assemblies VME64X ACTION PIN Contacts



Part Number 148452-5 Shown



Material:

Housing — Thermoplastic, glass-filled, grey, 94V-0 rated

Receptacle Contacts — Phosphor bronze

Ground Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

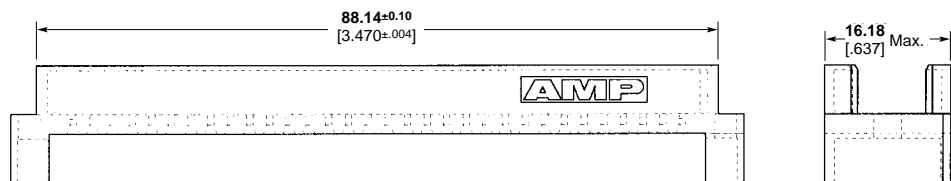
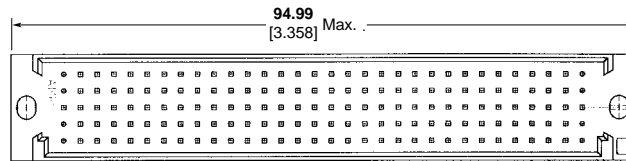
Related Product Data:

Electrical/Mechanical Data — page 3087

No. of Positions	Rows Loaded	DIN Levels	ACTION PIN Contacts	
			6.00 [.236]	17.00 [.669]
160	A, B, C	II	148452-5	1-148445-5

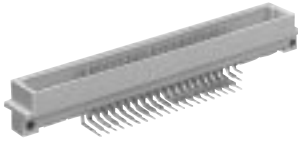
Shroud

PCB Thickness	Part Number
.125	148527-1
.150	148527-2



For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — page 3098

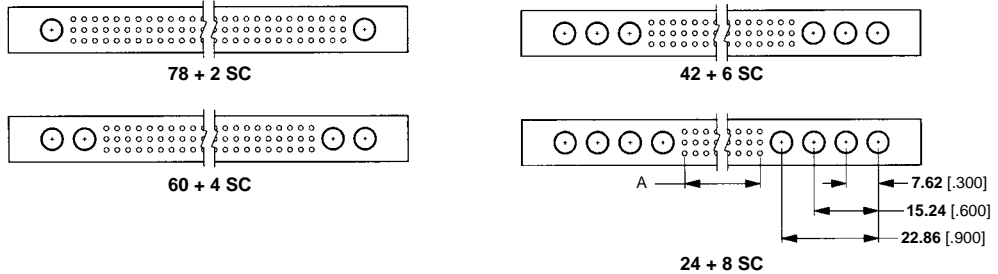
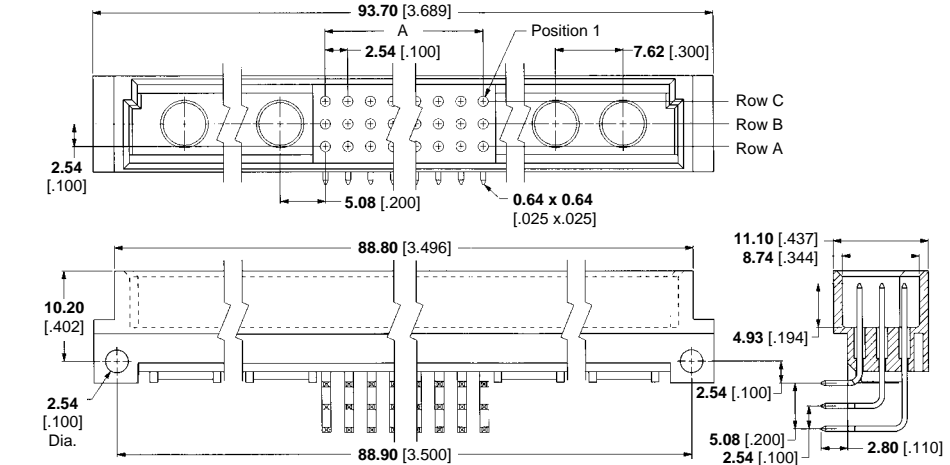
Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Instruction Sheet
408-6927

Contact Arrangement



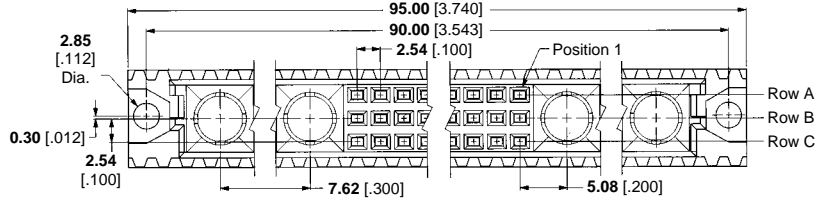
For Type M Receptacle Assemblies for CompactPCI Application

No. of Positions	Rows Loaded*	Dimension A	DIN Level	Part Numbers
78 + 2 SC	A,B,C	63.50 2.500 (25 x 2.54 [.100])	II	148411-5
60 + 4 SC	A,B,C	48.26 1.900 (19 x 2.54 [.100])	II	148412-5
42 + 6 SC	A,B,C	33.02 1.300 (13 x 2.54 [.100])	II	148413-5
24 + 8 SC	A,B,C	17.78 .700 (7 x 2.54 [.100])	II	148414-5

*Loaded with signal contacts only. See page 3100 for male power and coaxial contacts.

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

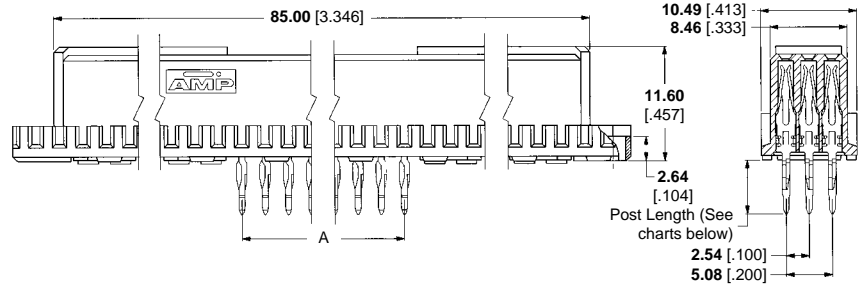
DIN II Plating — Meets performance requirements of DIN Level II.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — page 3097

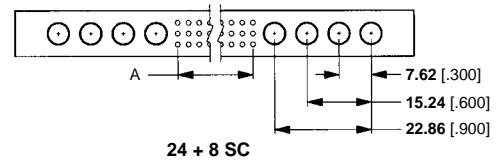
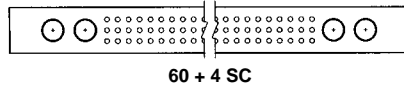
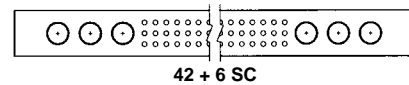
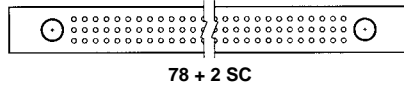


Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Contact Arrangement



PC Board Thickness 1.57 [.062] & above

No. of Positions	Rows Loaded*	Dimension A	Part Numbers/Post Lengths		
			Bd to Bd**		Wrap-Type**
			6.00 [.236]	13.00 [.512]	
78 + 2 SC	A,B,C	63.50 2.500 (25 x 2.54[.100])	148417-5	148418-5	148419-5
60 + 4 SC	A,B,C	48.26 1.900 (19 x 2.54[.100])	148420-5	148421-5	148422-5
42 + 6 SC	A,B,C	33.02 1.300 (13 x 2.54[.100])	148423-5	148424-5	148425-5
24 + 8 SC	A,B,C	17.78 .700 (7 x 2.54[.100])	148384-5	148427-5	148381-5

*Loaded with signal contacts only.

**DIN Performance Level II. For "piggy back" applications, consult Tyco Electronics Sales Representative.

***Connectors are toolless (flat rock).

For complete product information, order Catalog 1307515

High Current and Coaxial Contacts for Type M Receptacle Assemblies

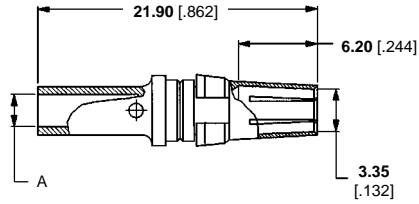
Material and Finish:

Contacts — Copper alloy, gold over nickel plated

Retaining Ring — Copper alloy

Note: These power contacts are used in the Type M Receptacle Assemblies shown on page 3098.

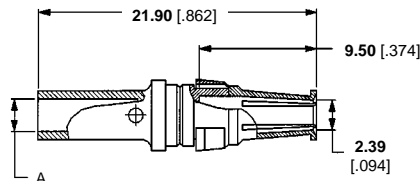
Female Power Contacts for Cable Termination



Part Number 148221-1

AWG	Contact Rated Current (Amperes)	Dim. A	Part Numbers	
			Solder	Crimp
8	40	4.80 .189	1393589-7	148432-1
12-14	20	2.80 .110	1393589-9	148221-1
16-18	10	1.70 .067	1-1393589-1	148410-1

Female Power Contacts (MFBL) for Cable Termination



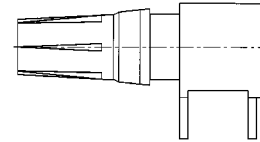
Part Number 148250-1

AWG	Contact Rated Current (Amperes)	Dim. A	Part Numbers	
			Solder	Crimp
8	40	4.80 .189	1-1393589-6	148433-1
12-14	20	2.80 .110	1-1393589-5	148250-1
16-18	10	1.70 .067	1-1393589-4	148416-1

Female Power Contact for PC Board Mount



Part Number 148375-1
(40 ampere rated current)



Part Number 148513-1
RIA Power

Coaxial Contacts

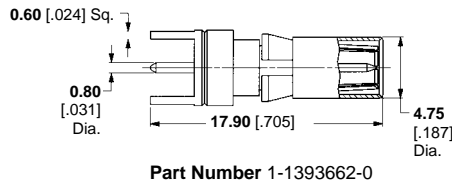
Material and Finish:

Outer Contact — Copper alloy, gold plated

Insulator — PTFE

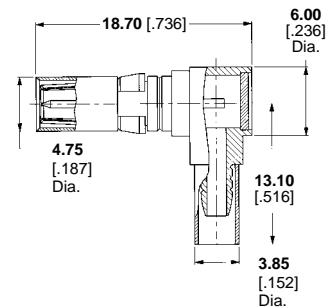
Note: These coaxial contacts are used in the Type M Receptacle Assemblies shown on page 3098.

Coaxial Contact for Female Connector, PC Board Mount (50 ohm)



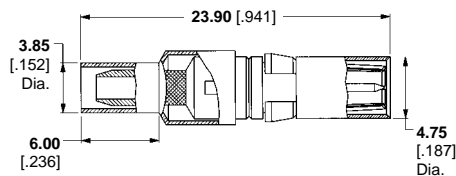
Part Number 1-1393662-0

Note: Contact will raise the connector assembly up 3.18 [.125] from the PC board surface.



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

Coaxial Contacts for Female Connectors, Cable Termination (50 ohm)



Part Number 1392019-1 for RG316 Cable

For complete product information, order Catalog 1307515

High Current and Coaxial Contacts for Type M Pin Assemblies

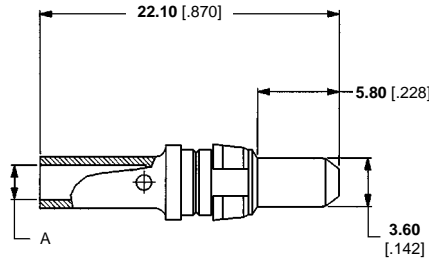
Material and Finish:

Contact — Brass, gold over nickel plated

Retaining Ring — Copper alloy

Note: These power contacts are used in the Type M Pin Assemblies shown on page 3097.

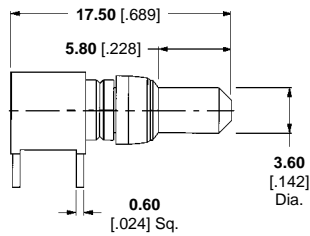
Male Power Contacts for Cable Termination



Part Number 148248-1

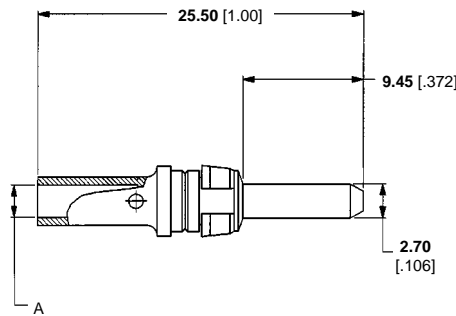
AWG	Contact Rated Current (Amperes)	Dim. A	Part Numbers	
			Solder	Crimp
8	40	4.80 .189	1393589-1	148430-1
12-14	20	2.80 .110	1393589-3	148248-1
16-18	10	1.70 .067	1393589-5	148407-1

Male Power Contact for PC Board Mount



Part Number 148354-1
(25 ampere rated current)

Male Power Contacts (MFBL) for Cable Termination



Part Number 148249-1

AWG	Contact Rated Current (Amperes)	Dim. A	Part Numbers
			Crimp
8	40	4.80 .189	148431-1
12-14	20	2.80 .110	148249-1
16-18	10	1.70 .067	148409-1

Coaxial Contacts

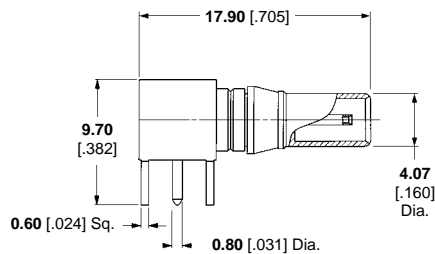
Material and Finish:

Inner Contact — Copper alloy, gold plated

Insulator — PTFE

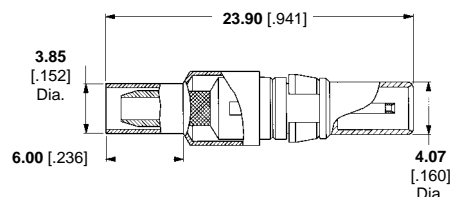
Note: These coaxial contacts are used in the Type M Pin Assemblies shown on page 3097.

Coaxial Contact for Male Connector PC Board Mount (50 ohm)



Part Number 1-1393662-4

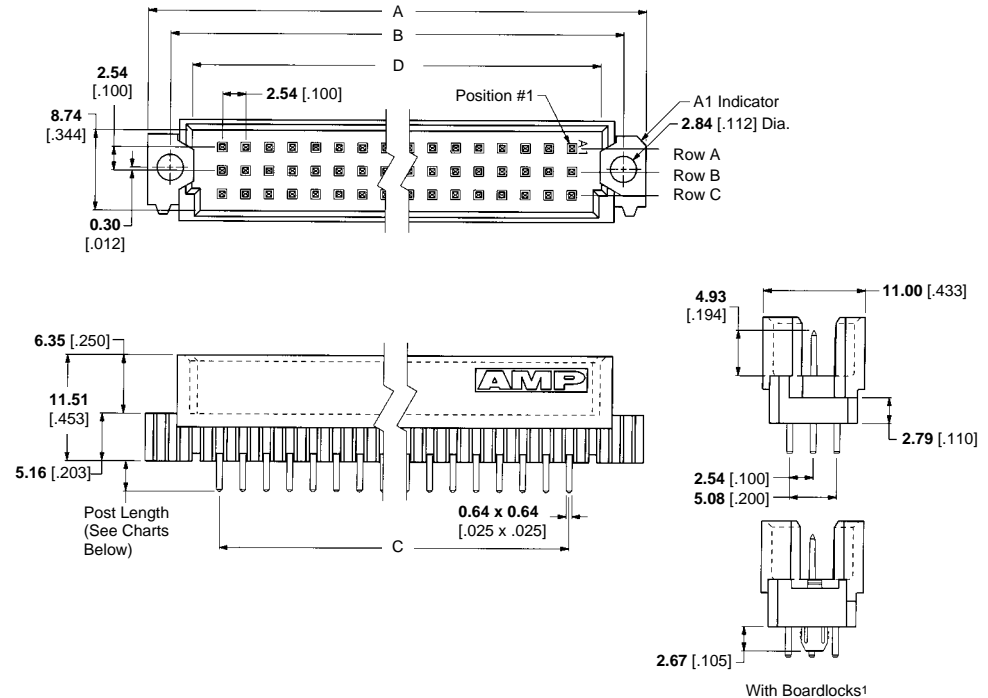
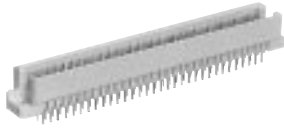
Coaxial Contacts for Male Connectors, Cable Termination (50 ohm)



Part Number 1392020-1 for RG316 Cable

For complete product information, order Catalog 1307515

Type R Vertical Pin Assemblies with Solder Posts



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Brass

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3092, 3093, 3094, 3103

Technical Documents:

DIN Specification 41612

IEC Specification 603-2

Application Specification 114-9014

Instruction Sheet 408-6784

Standard Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		3.30 [.130] Post Length	4.57 [.180] Post Length
96	A,B,C	95.00	90.00	78.74	85.29	II	650908-5	650470-5
		3.740	3.543	3.100	3.358		536035-5 ¹	—
		—	—	—	—	III	650908-9	650470-9
64	A,C	95.00	90.00	78.74	85.29	II	650933-5	650934-5
		3.740	3.543	3.100	3.358		536419-5 ¹	536420-5 ¹
		—	—	—	—	—	—	—

¹With Boardlocks

Half Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		3.30 [.130] Post Length	4.57 [.180] Post Length
48	A,B,C	54.37	49.35	38.10	44.65	II	650479-5	650477-5
		2.140	1.943	1.500	1.758		536421-5 ¹	536422-5 ¹
		—	—	—	—	III	650479-9	—
32	A,C	54.37	49.35	38.10	44.65	II	650935-5	650936-5
		2.140	1.943	1.500	1.758		536423-5 ¹	536424-5 ¹
		—	—	—	—	—	—	—

¹With Boardlocks

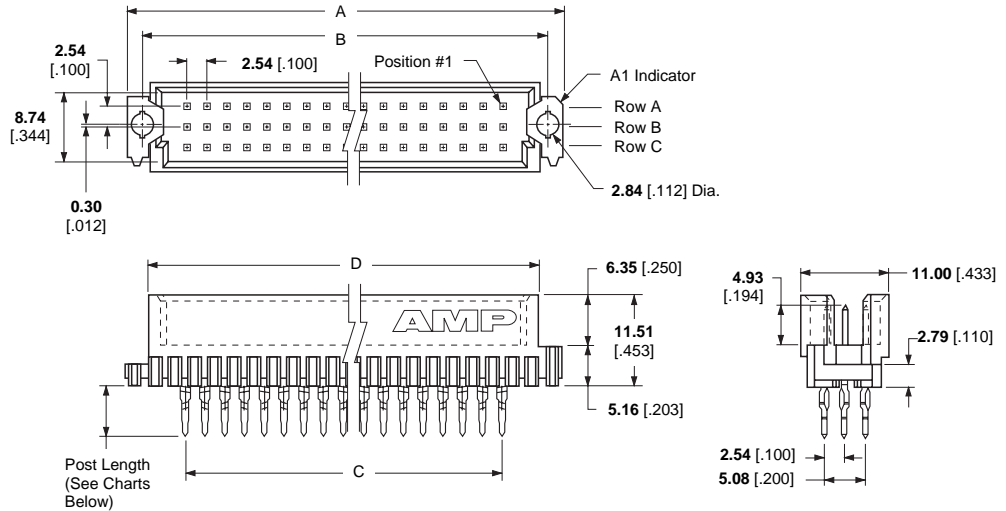
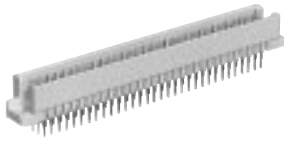
Expanded Size

No. of Positions	Rows Loaded	Dimensions				DIN Level	Part Numbers	
		A	B	C	D		3.30 [.130] Post Length	4.57 [.180] Post Length
120	A,B,C	115.19	110.31	99.06	105.61	II	650919-5	650910-5
		4.535	4.343	3.900	4.158		536131-5 ¹	536426-5 ¹
150	A,B,C	140.59	135.71	124.46	131.01	II	650922-5	650911-5
		5.535	5.343	4.900	5.158		536427-5 ¹	536428-5 ¹

¹With Boardlocks

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3092, 3093, 3094, 3103

Accessories — pages 3015

Technical Documents:

DIN Specification 41612

IEC Specification 603-2

Application Specification 114-9014

Instruction Sheets

408-6927, 408-9740

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		6.35 [.250] Post Length	13.23 [.521] Post Length
96	A,B,C	95.00	90.00	78.74	88.01	II	650889-5	650909-5
		3.740	3.543	3.100	3.465	III	650889-9	1-650909-41
64	A,C	95.00	90.00	78.74	88.01	II	650912-5	650930-5
		3.740	3.543	3.100	3.465	III	—	1-650930-41

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

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

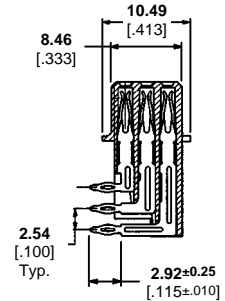
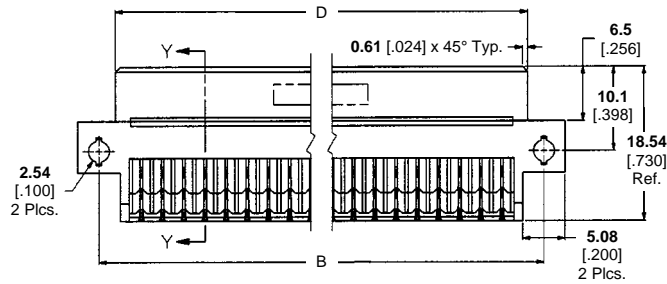
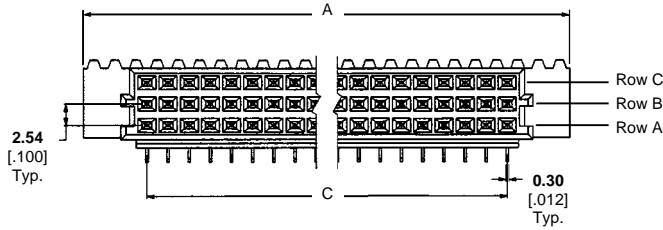
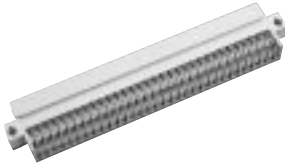
No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		6.35 [.250] Post Length	13.23 [.521] Post Length
48	A,B,C	54.37	49.35	38.10	47.37	II	650918-5	650917-5
		2.140	1.943	1.500	1.865	III	—	—
32	A,C	54.37	49.35	38.10	47.37	II	650931-5	650932-5
		2.140	1.943	1.500	1.865	III	—	—

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

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		6.35 [.250] Post Length	13.23 [.521] Post Length
120	A,B,C	115.19	110.31	99.06	108.33	II	650921-5	650920-5
		4.535	4.343	3.900	4.265	III	—	—
150	A,B,C	140.59	135.71	124.46	133.73	II	650924-5	650923-5
		5.535	5.343	4.900	5.265	III	—	—

For complete product information, order Catalog 1307515

Type R Receptacle with Eye of Needle Compliant Pin



Material:

- Housing** — Polyester, grey
- Contacts** — Phosphor bronze
- DIN II Plating** — Meets performance requirements of DIN Level II.

Related Product Data:

- DIN Performance Levels** — page 3086
- Performance Specifications** — page 3087
- Mateable Connectors** — pages 3101, 3102, 3104

Standard Size

No. of Positions	Rows Loaded	Dimensions				DIN Level	Part Numbers
		A	B	C	D		
96	A,B,C	93.88	88.90	78.74	85.00	II	148292-5
		3.696	3.500	3.100	3.346		
64	A,B	93.88	88.90	78.74	85.00	II	148296-2
	A,C	3.696	3.500	3.100	3.346		148296-1
48	A,B,C	53.24	48.26	38.10	44.35	II	148359-4
		2.096	1.900	1.500	1.746		

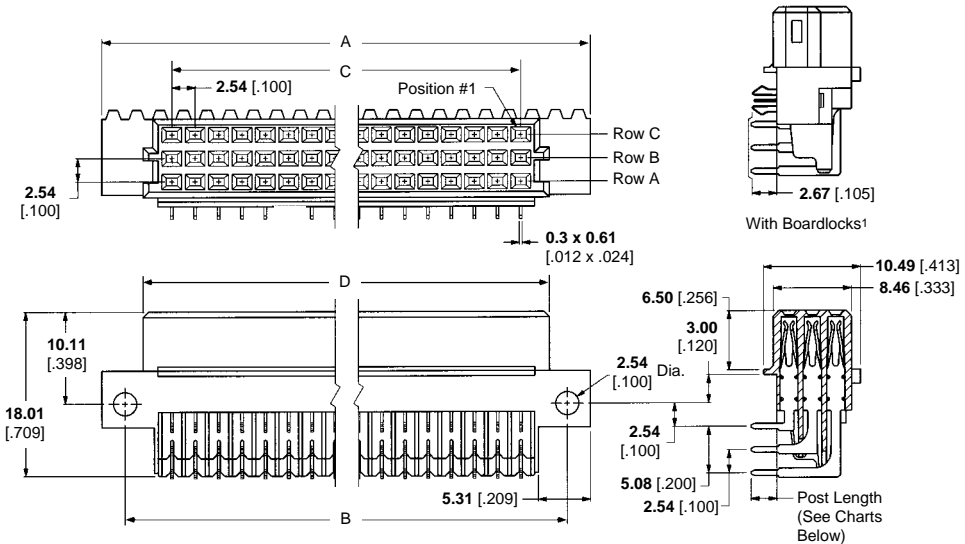
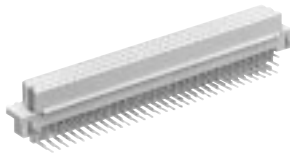
Expanded Size

No. of Positions	Rows Loaded	Dimensions				DIN Level	Part Numbers
		A	B	C	D		
150	A,B,C	139.60	134.62	124.46	130.71	II	148295-5
		5.496	5.300	4.900	5.146		
120	A,B,C	114.20	109.22	99.06	105.31	II	148360-5
		4.496	4.300	3.900	4.146		

Note: Connectors on this page are toolless (flat rock)

For complete product information, order Catalog 1307515

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



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts and Boardlocks — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3091, 3101, 3102, 3103

Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Application Specification
114-9014

Instruction Sheet
408-6784

Standard Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		2.79 [.110] Post Length	4.24 [.167] Post Length
96	A,B,C	93.87	88.90	78.74	85.00	II	650461-42	650462-42
		3.696	3.500	3.100	3.346		650461-5	650462-5
		650895-41,2	650896-5 ¹					
	A,C	650895-5 ¹	—					
		III	650461-9	—				
		650870-42	—					
64	A,C	93.87	88.90	78.74	85.00	II	650897-41,2	536431-5 ¹
		3.696	3.500	3.100	3.346		650897-5 ¹	—
		III	—	650871-9				
	—	—	536431-9 ¹					

Half Size

No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		2.79 [.110] Post Length	4.24 [.167] Post Length
48	A,B,C	53.24	48.26	38.10	44.35	II	650868-42	650869-5
		2.096	1.900	1.500	1.746		650868-5	—
		650893-5 ¹	536432-5 ¹					
	A,C	650868-9	650869-9					
		III	650867-5	650958-5				
		536433-5 ¹	536434-5 ¹					

Expanded Size

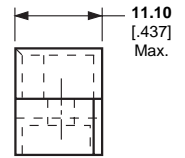
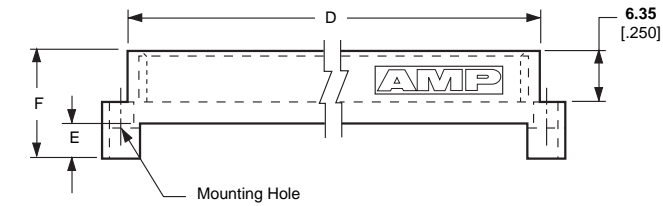
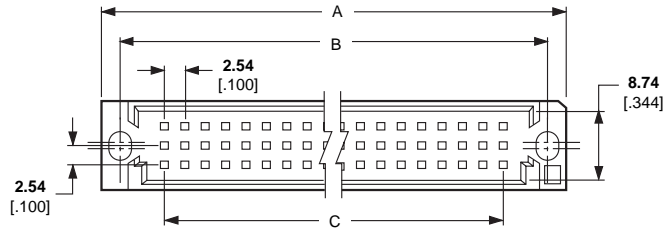
No. of Positions	Rows Loaded	Dimensions				DIN Levels	Part Numbers	
		A	B	C	D		2.79 [.110] Post Length	4.24 [.167] Post Length
150	A,B,C	139.60	134.62	124.46	130.61	II	650875-5	650877-5
		5.496	5.300	4.900	5.142		650959-5 ¹	—
		650874-42	—					
120	A,B,C	114.20	109.22	99.06	105.21	II	650874-5	—
		4.496	4.300	3.900	4.142		650899-41,2	—
		650899-5 ¹	—					

For complete product information, order Catalog 1307515

¹ With Boardlocks

² Contact plating .000030 Gold in contact area, tin lead on tails, all over .000050 Nickel.

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



Material:

Polyester, grey, 94V-0 rated

Related Product Data:

Technical Documents:
Application Specification
114-9014

Standard Size

PC Board Thickness	Use With Post Length	Dimensions						Part Numbers	
		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		
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		
2.36 .093	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		
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		
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		

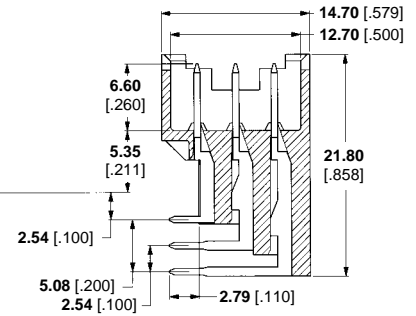
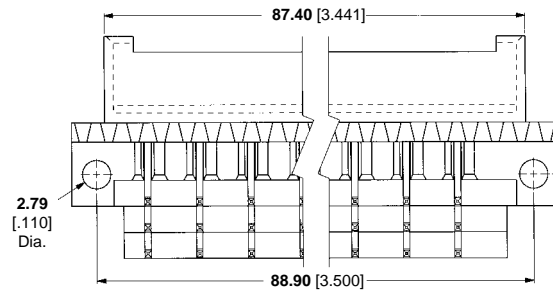
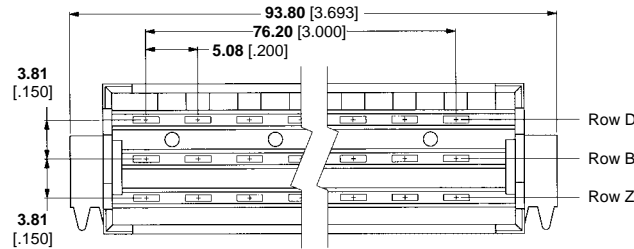
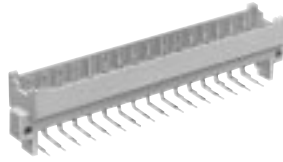
Half Size

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

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. Twelve interference areas are located in selected cavities.

For complete product information, order Catalog 1307515

Type F Right-Angle Pin Assemblies with Solder Posts



Material:

Housing — Polyester, grey, 94V-0 rated

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — pages 3107, 3108

Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Instruction Sheet
408-6784

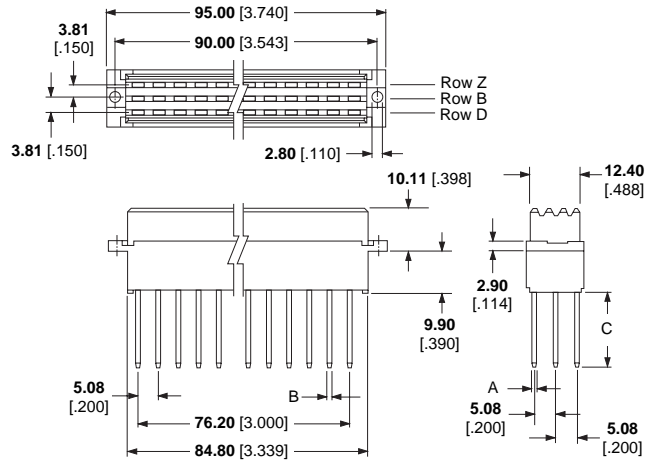
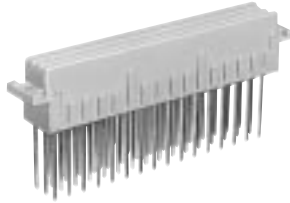
Standard Size

No. of Positions	Rows Loaded	DIN Levels	Part Numbers	
			—	MFBL*Z32
48	Z,B,D	II	2-164045-4	2-166095-4
		III	2-164045-8	—
32	Z,B	III	—	2-166096-8
32	Z,D	II	2-164306-4	—

*MFBL (Make First/Break Last)

For complete product information, order Catalog 1307515

Type F Vertical Receptacle Assemblies with Wrap Type and Solder Posts



Material:

Housing — Polycarbonate, grey, 94V-1 rated or polyester (see chart)

Contacts — Phosphor bronze

DIN II Plating — Meets performance requirements of DIN Level II.

DIN III Plating — Meets performance requirements of DIN Level III.

Related Product Data:

DIN Performance Levels — page 3086

Performance Specifications — page 3087

Mateable Connectors — page 3106

Technical Documents:

DIN Specification
41612

IEC Specification
603-2

Instruction Sheet
408-6784

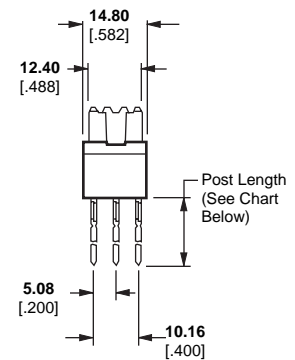
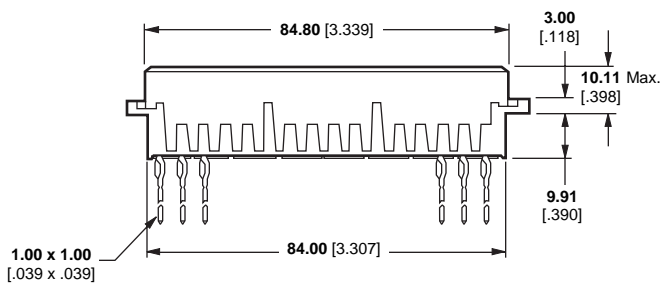
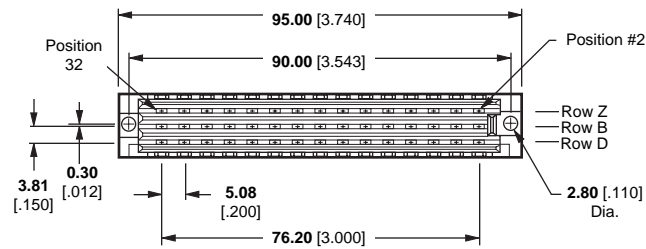
No. of Positions	Post Type	Rows Loaded	DIN Levels	Part Numbers
48	Wrap Type	Z,B,D	II	166717-4 ¹
	1.0 [.039] Square	Z,B,D	II	166733-4
32	4 [.157] Solder	Z,B	II	166732-4
	Wrap Type	Z,D	II	166719-4 ¹
	1.0 [.039] Square	Z,D	II	166951-4
	4 [.157] Solder	Z,D	II	166951-4

¹ Housing material is polyester, grey, 94V-0 rated.

Post Type	Post Dimensions		
	A	B	C
Wrap Type 1.0 [.039] Square	1.00 .039	1.00 .039	22.00 .866
4 [.157] Solder	0.60 .022	0.30 .012	4.00 .157

For complete product information, order Catalog 1307515

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



Material:

- Housing** — Polyester, grey, 94V-0 rated (except where noted)
- Contacts** — Phosphor bronze
- DIN II Plating** — Meets performance requirements of DIN Level II.
- DIN III Plating** — Meets performance requirements of DIN Level III.

Related Product Data:

- DIN Performance Levels** — page 3086
- Performance Specifications** — page 3087
- Mateable Connectors** — page 3106
- Application Tooling** — page 3110

Technical Documents:

- DIN Specification**
41612
- IEC Specification**
603-2
- Instruction Sheet**
408-6927

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

No. of Positions	Rows Loaded	DIN Levels	Part Numbers	
			6 [.236] ¹ Post Length	22 [.866] Post Length
48	Z,B,D	II	166648-4	166555-4
		III	2-166648-4 ²	—
32	Z,B	II	166649-4	—
		III	166649-8	166594-8
	Z,D	III	166728-8	166727-8

¹ Pre-notched to break off at 6.00 [.236] from bottom of connector. Connectors on this page are toolless (flat rock).
² Extended ends of posts already broken off (only for 2-166648-4).

For complete product information, order Catalog 1307515

Eurocard Connectors — Insertion Tooling

Eurocard connectors with ACTION PIN contacts allow high speed, solderless backplane construction through reliable press-fit application.

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 AMP Application Specification No. 114-9014. Also, AMP Instruction Sheet No. 408-6927 provides AMP recommendations for manufacturing board support fixtures.

Application Press Options:

SM-3 Pneumatic Machine – Part Number 8147000-2

SM-10/20 Electric-Hydraulic Machine – Part Number 803880-6

Manual Arbor Frame – Part Number 58024-1

Eurocard Connector Seating Tools

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

¹ Flat rock assembly; tooling not required

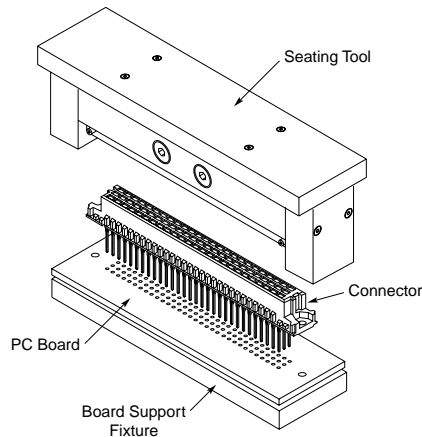
² Programmable tooling for MFBL pin assemblies

* See customer drawing for positioner and crimp setting.

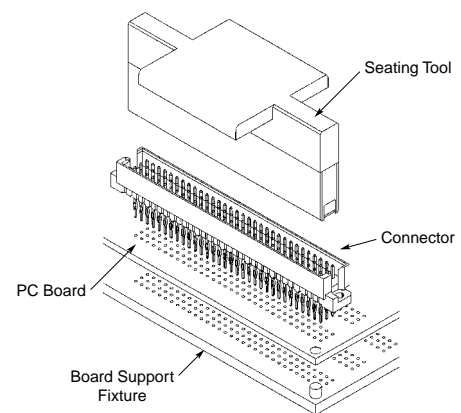
Eurocard Connector Removal Tools

Connector Type	Tail Length	Removal Tool Part Numbers
C (96 Position, 3 Row)	≤ 6.35 .250	534611-1
	12.70 .500	534611-2
	17.00 .669	534611-3
M (Power Contact)	—	106242-1

Receptacle Assembly Seating Tools



Pin Assembly Seating Tools



For complete product information, order Catalog 1307515