5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

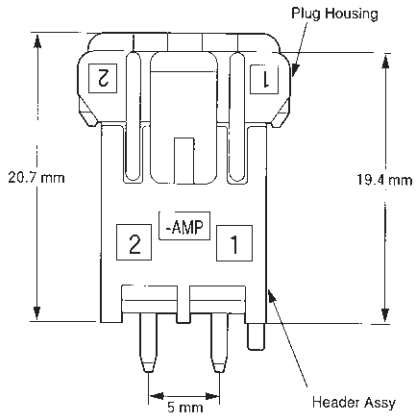
Quick Reference Chart for Mating Part Numbers

No. of Pos.	Plug Housing		Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	Type of Keying/Color	Part Number		
2	Type A/Natural	1376388-1	1376394-1	1376382-1
	Type B/Red	1-1376388-2	1376394-1	1-1376382-2
	Type C/Blue	2-1376388-3	1376294-1	2-1376382-3
	Type D/Yellow	3-1376388-4	1376394-1	3-1376382-4
3	Type A/Natural	1376389-1	1376395-1	1376383-1 1376421-1
	Type B/Red	1-1376389-2	1376395-1	1-1376383-2 1-1376421-2
	Type C/Blue	2-1376389-3	1376395-1	2-1376383-3 2-1376421-3
	Type D/Yellow	3-1376389-4	1376395-1	3-1376383-4 3-1376421-4
4	Type A/Natural	1376390-1	1376396-1	1376384-1
	Type B/Red	1-1376390-2	1376396-1	1-1376384-2
	Type C/Blue	2-1376390-3	1376396-1	2-1376384-3
	Type D/Yellow	3-1376390-4	1376396-1	3-1376384-4
6	Type A/Natural	1376391-1	1376397-1	1376385-1
	Type B/Red	1-1376391-2	1376397-1	1-1376385-2
	Type C/Blue	2-1376391-3	1376397-1	2-1376385-3
	Type D/Yellow	3-1376391-4	1376397-1	3-1376385-4
2 Row				
4	Type A/Natural	1376392-1	1376394-1	1376386-1
	Type B/Red	1-1376392-2	1376394-1	1-1376386-2
	Type C/Blue	2-1376392-3	1376394-1	2-1376386-3
	Type D/Yellow	3-1376392-4	1376394-1	3-1376386-4
6	Type A/Natural	1376393-1	1376395-1	1376387-1
	Type B/Red	1-1376393-2	1376395-1	1-1376387-2
	Type C/Blue	2-1376393-3	1376395-1	2-1376387-3
	Type D/Yellow	3-1376393-4	1376395-1	3-1376387-4

*Included in Header Assy. line are Tube Stick version. Refer to the appropriate description in the catalog.

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

Mating Configurations



Note: Dimensions shown are metric.

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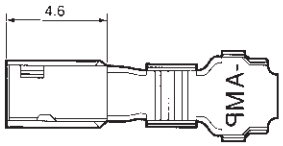
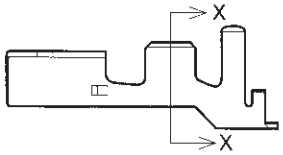
5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

Receptacle Contacts

Material and Finish
Pre-tinned Copper Alloy





Section X-X

Wire Range		Wire Ins. Dia.	Receptacle Contact Part No.	Applicator Part No.
AWG	mm²			
24~20	0.22~0.53	1.89~2.7	1376348-1 (Strip Form)	*
20~16	0.5~1.25	2.0~3.1	1376347-1 (Strip Form)	*

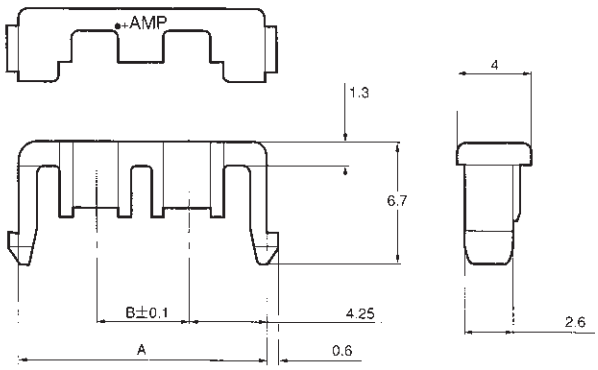
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Number.

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

Double Lock Plates

Material and Finish
UL94V-0, 6/6 Nylon, glass filled, Black



No. of Pos.	Dimensions (Double Lock Plate)		Double Lock Plate Part No.	Applicable Plug Part No.
	A	B		
2	13.5	5	1376394-1	□-1376388-□ □-1376392-□
3	18.5	10	1376395-1	□-1376389-□ □-1376393-□
4	23.5	15	1376396-1	□-1376390-□
6	33.5	25	1376397-1	□-1376391-□

* Contact the Tooling Assistance Center (TAC) for Applicator Part Number.

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

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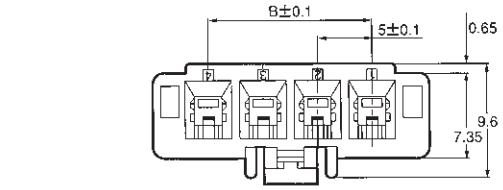
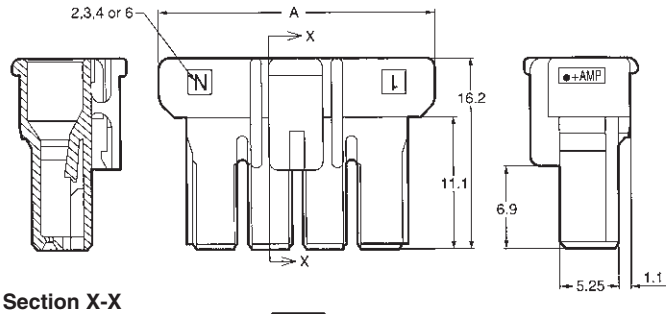
5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

Plug Housings (For Receptacle Contacts)

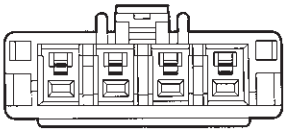
Material and Finish
Housing—6/6 Nylon, glass filled

Related Product Data
Receptacle Contacts—page 137
Double Lock Plates—page 137
Mating Headers—page 140

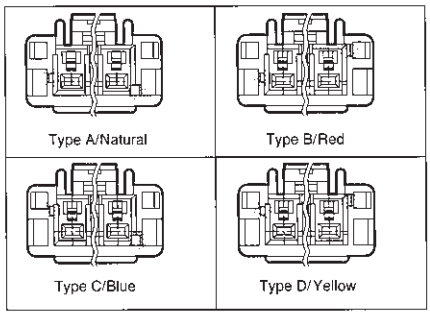




Section X-X



Type of Keying/Color



No. of Pos.	Dimensions		Plug Housing Part No. Type of Keying/Color				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type A Natural	Type B Red	Type C Blue	Type D Yellow		
2	15	—	1376388-1	1-1376388-2	2-1376388-3	3-1376388-4	1376394-1	□-1376382-□
3	20	10	1376389-1	1-1376389-2	2-1376389-3	3-1376389-4	1376395-1	□-1376383-□ □-1376421-□
4	25	15	1376390-1	1-1376390-2	2-1376390-3	3-1376390-4	1376396-1	□-1376384-□
6	35	25	1376391-1	1-1376391-2	2-1376391-3	3-1376391-4	1376397-1	□-1376385-□

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

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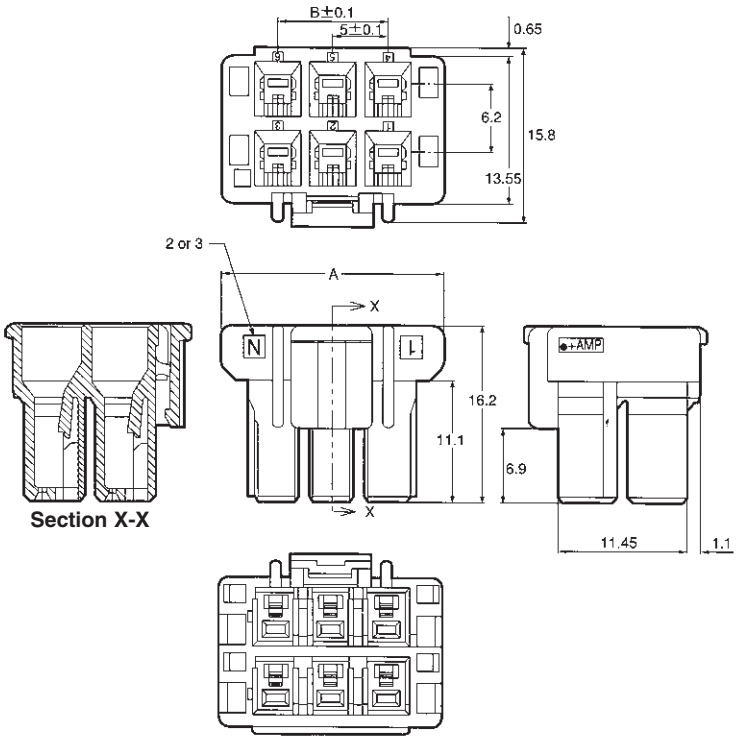
5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

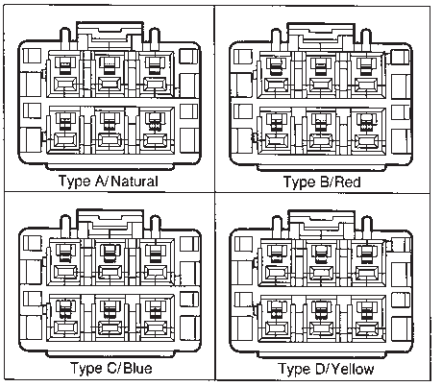
Plug Housing (2 Rows) (For Receptacle Contacts)

Material and Finish
Housing—6/6 Nylon, glass filled

Related Product Data
Receptacle Contacts—page 137
Double Lock Plates—page 137
Mating Headers—page 141



Type of Keying/Color



No. of Pos.	Dimensions		Plug Housing Part No. Type of Keying/Color				Applicable Double Lock Plate Part Number	Mating Header Assy. Part Number
	A	B	Type A Natural	Type B Red	Type C Blue	Type D Yellow		
4	15	—	1376392-1	1-1376392-2	2-1376392-3	3-1376392-4	1376394-1	□-1376386-□
6	20	10	1376393-1	1-1376393-2	2-1376393-3	3-1376393-4	1376395-1	□-1376387-□

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

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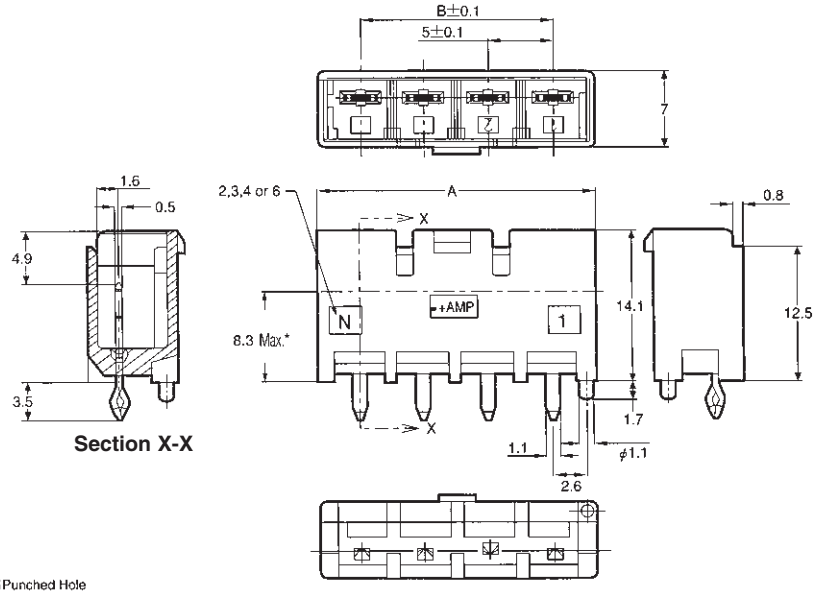
5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

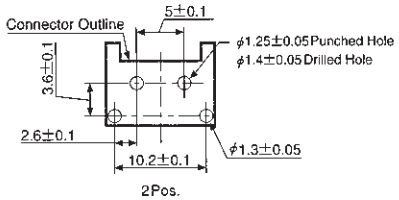
Vertical Header Assembly

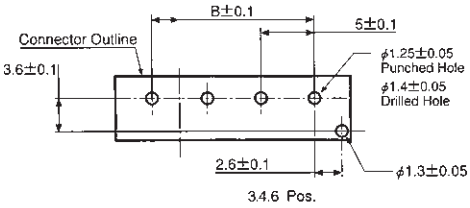
Material and Finish
Housing—6/6 Nylon, glass filled
Tab Contacts -Copper Alloy, Tin plated

Related Product Data
Mating Plug Housings—page 138



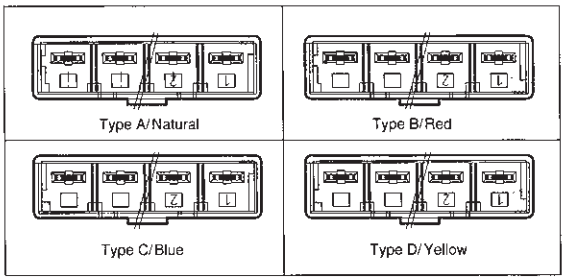
Section X-X





PC Board Layout

Type of Keying/Color



No. of Pos.	Dimensions A	Dimensions B	Loose Piece Tube (Qty.)	Vertical Header Assy. Part No. Type of Keying/Color Type A Natural	Type B Red	Type C Blue	Type D Yellow	Mating Plug Housing Part Number
2	11.6	—	L.P	1376382-1	1-1376382-2	2-1376382-3	3-1376382-4	□-1376388-□
			Tube	1376437-1 (40)	1-1376437-2 (40)	2-1376437-3 (40)	3-1376437-4 (40)	
3	16.6	10	L.P	1376383-1	1-1376383-2	2-1376383-3	3-1376383-4	□-1376389-□
			Tube	1376439-1 (25)	1-1376439-2 (25)	2-1376439-3 (25)	3-1376439-4 (25)	
4	21.6	15	L.P	1376384-1	1-1376384-2	2-1376384-3	3-1376384-4	□-1376390-□
			Tube	1376440-1 (20)	1-1376440-2 (20)	2-1376440-3 (20)	3-1376440-4 (20)	
6	31.6	25	L.P	1376385-1	1-1376385-2	2-1376385-3	3-1376385-4	□-1376391-□
			Tube	1376441-1 (15)	1-1376441-2 (15)	2-1376441-3 (15)	3-1376441-4 (15)	
2*	16.6	10	L.P	1376421-1	1-1376421-2	2-1376421-3	3-1376421-4	□-1376389-□
			Tube	1376444-1 (25)	1-1376444-2 (25)	2-1376444-3 (25)	3-1376444-4 (25)	

*10 mm centerline

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

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5.0 mm Power Key Connectors (5.0 PKC) (Wire-to-Board) (Continued)

Vertical Header Assembly (2 Rows)

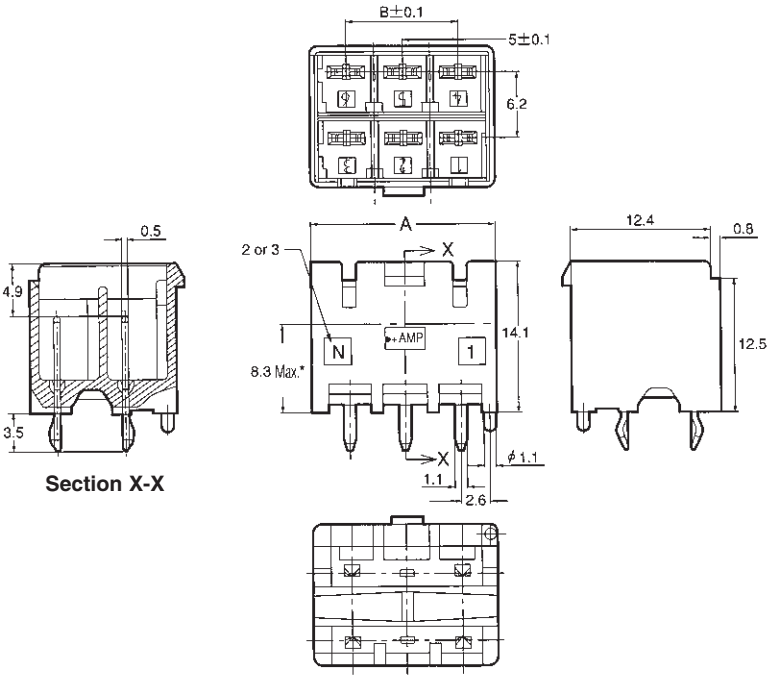
Material and Finish

Housing—6/6 Nylon, glass filled

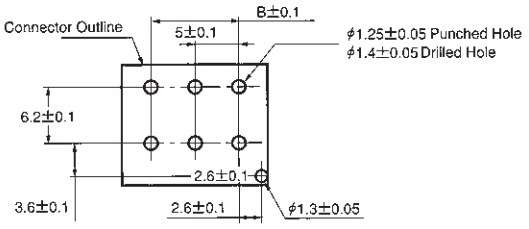
Tab Contacts—Copper Alloy, Tin plated

Related Product Data

Mating Plug Housings—page 139

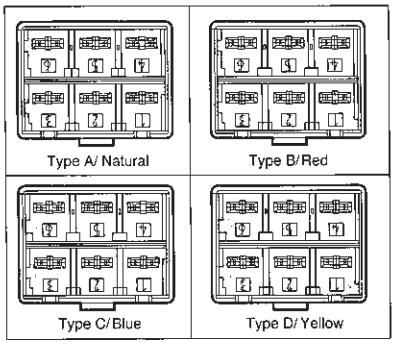


Section X-X



PC Board Layout

Type of Keying/Color



No. of Pos.	Dimensions A	Dimensions B	Loose Piece Tube (Qty.)	Vertical Header Assy. Part No. Type of Keying/Color Type A Natural	Type B Red	Type C Blue	Type D Yellow	Mating Plug Housing Part Number
4	11.6	—	L.P	1376386-1	1-1376386-2	2-1376386-3	3-1376386-4	□-1376392-□
			Tube	1376442-1 (40)	1-1376442-2 (40)	2-1376442-3 (40)	3-1376442-4 (40)	
6	16.6	10	L.P	1376387-1	1-1376387-2	2-1376387-3	3-1376387-4	□-1376393-□
			Tube	1376443-1 (25)	1-1376443-2 (25)	2-1376443-3 (25)	3-1376443-4 (25)	

Note: Dimensions shown are metric.

Note: All part numbers are RoHS Compliant.

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Engineering Notes

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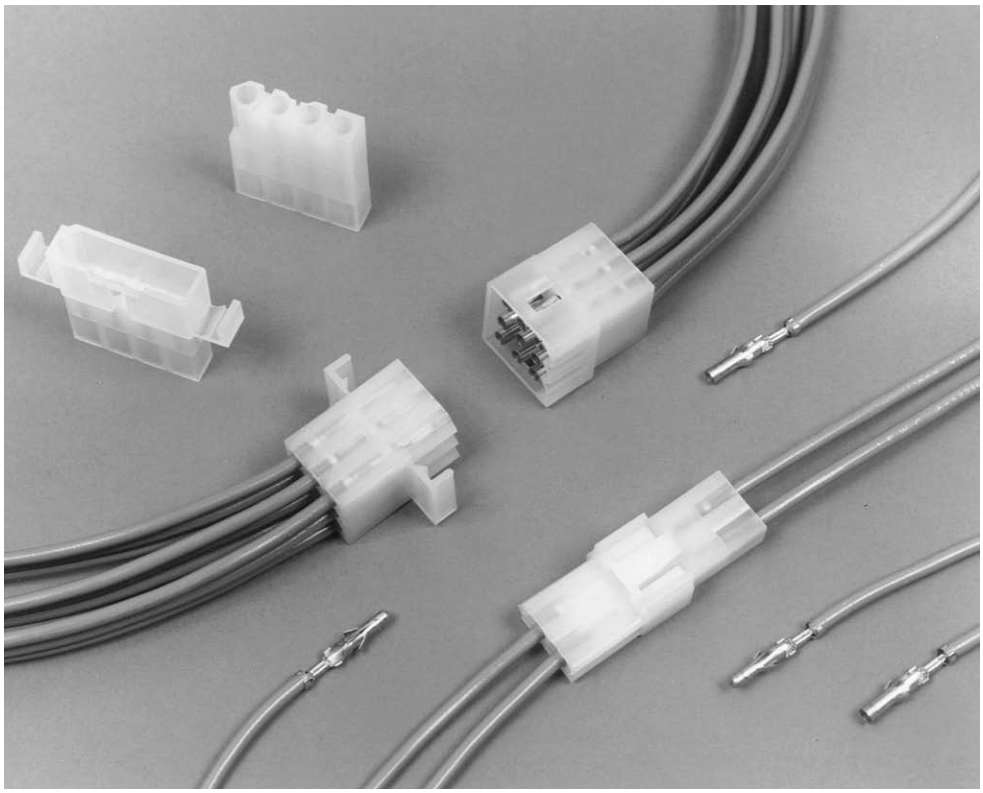
.093 [2.36] Commercial Pin and Socket Connectors

Product Facts

- Polarized
- Cavity identification
- Low contact-mating force
- Dual locking lances
- Detent and positive locking
- Contacts available in brass and phosphor bronze with tin and gold plating
- Panel mounting and free-hanging styles
- "F" crimp contacts
- Applicator and hand tool available
- Economical commercial-grade connectors
- Compatible with high-speed application machinery and competitive soft shells
- Wire range 24 to 14 AWG [0.2 to 2 mm²]
- Accepts wires with insulation diameters as large as .180 [4.57]
- Housings available in 1 to 15 positions
- .093 plug and receptacle housings accept pin or socket contacts. The preferred convention is to use socket contacts with receptacle housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189



Performance Characteristics

The .093 Commercial Pin and Socket Connectors performance characteristics found on pages 143-144 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Thermal Shock— -55°C to +105°C

Temperature-Humidity Cycling—+25°C to +65°C at 90–95% RH

Corrosion—48 hr. at 5% salt concentration

Vibration—10-55-10 cycles per minute at .06 [1.52] total excursion

Physical Shock—18 shocks, 50 Gs sawtooth in 11 milliseconds

Durability—50 mating cycles

Dielectric Withstanding Voltage—1.0 kVAC

Insulation Resistance—1000 megohms min. initial

Voltage Rating—250 V AC or DC

Connector Mating—2.5 lb. [11.1 N] max. per contact

Connector Unmating—1.5 lb. [6.7 N] min. per contact

Contact Retention—10 lb. [44.5 N] min.

Technical Documents

Application Specification
114-49000 .093 Commercial Pin and Socket Connectors

Product Specification
108-1038 .093 Commercial Pin and Socket Connectors

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Revised 4-08

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Performance Characteristics (continued)

Maximum Current—Maximum current rating of .093 Commercial Pin and Socket Connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Related Product Data

Product Specification—108-1038

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

.093 Commercial Pin and Socket Connectors — Calculated Current Table

Number of Circuits	Wire AWG					
	14	16	18	20	22	24
2	13.00	12.00	11.00	8.00	6.00	6.00
3	13.00	11.00	10.00	8.00	6.00	5.00
4 In-Line	11.00	10.00	9.00	7.00	5.00	4.00
4 Matrix	11.00	10.00	9.00	7.00	5.00	4.00
5	10.00	9.00	8.00	6.00	5.00	4.00
6	10.00	9.00	8.00	6.00	4.00	4.00
9	9.00	7.00	6.00	5.00	4.00	3.00
12	8.00	7.00	6.00	4.00	3.00	3.00
15	7.00	6.00	5.00	4.00	3.00	3.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested and this chart contains interpolated and extrapolated values.

Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

Note: If wire lengths used are less than those listed above, the current-carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm²	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	Force (Min.) N
24	0.2	2.0	4.0	8	35.6
22	0.3–0.4	3.0	4.0	10	44.5
20	0.5–0.6	4.5	4.0	15	66.7
18	0.8–0.9	6.0	3.5	25	111.2
16	1.25–1.4	8.0	3.5	25	111.2
14	2	10.0	3.0	30	133.4

Note: This is the total resistance between wire crimps of a mated pin and socket.

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Contacts

Pin Diameter .093 [2.36]

Material

.010 [0.25] Stock Thickness

Pin and socket contacts can be used in either plug or receptacle housings.

Related Product Data

Product Specification—108-1038

Application Specification
114-49000

Performance Characteristics—pages 143-144

Housings

.198 [5.03] Centerline—pages 146-147

.250 [6.35] Centerline—pages 148-149

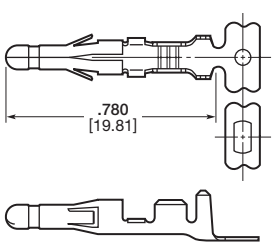
Panel Cutouts

.198 [5.03] Centerline Housings—page 147

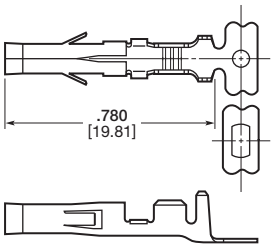
.250 [6.35] Centerline Housings—page 148

Technical Documents—pages 143 and 205-206

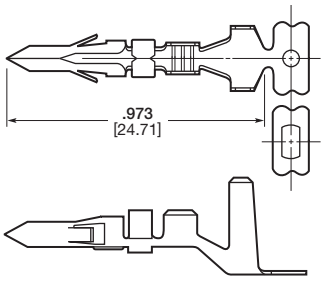
Application Tooling—pages 207-210



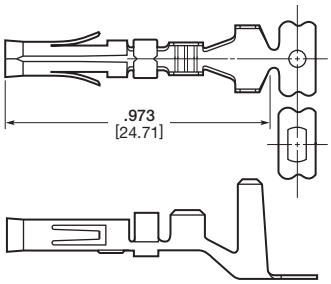
Pin



Socket



Pin
Part No. 770385-1



Socket
Part No. 770383-1

Wire Size AWG	Wire Size mm²	Ins. Dia.	Material & Finish	Contact Part Numbers Pin Strip Form	Pin Loose Piece	Socket Strip Form	Socket Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
24–18	0.2–0.9	**.110** 2.79	Brass, Pre-tin	350418-1	770147-1	350417-1	770146-1	466656-1[5] 466656-2[5] 466656-3[5]	90872-1
			Brass, Gold[2]	—	—	350417-3[2]	770146-3[2]		
			Brass Select Gold[1]	350418-5[1]	770147-5[1]	350417-5[1]	770146-5[1]		
20–14	0.6–2	**.140** 3.56	Brass, Pre-tin	350416-1	770145-1	350415-1	770144-1	466878-1[5] 466878-2[5] 466878-3[5]	90871-1
			Brass, Select Gold[1]	350416-5[1]	770145-5[1]	350415-5[1]	770144-5[1]		
			Phos. Brz., Pre-tin	—	—	350415-6	770144-6		
		.180 4.57	Brass, Pre-tin	770530-1[4]	—	770529-1[4]	—	567337-3[6] 567337-4[6] 567337-6[6]	—
18–14 or 2 (18)	0.8–2 or 2 (0.8–0.9)	**.180** 4.57 (per wire)	Brass, Pre-tin	770385-1[3]	—	—	—	567273-2[7] 567273-3[7] 567273-4[7]	—
			Phos. Brz., Pre-tin	—	—	770383-1[3]	—		

[1]Select Gold—.000030 [.000762] min gold in mating area over .000050 [.00127] min nickel.
[2]Gold—.000030 [.000762] min gold in mating area, overall gold flash over .000050 [.00127] min nickel.
[3]These contacts have a .0125 [.318] stock thickness and accept two wires, each with maximum .180 [4.57] insulation diameters. They can be used only with the following housing part numbers: 770364-1, 770365-1, 770450-1, 770451-1, 770452-1, and 770453-1 (see page 143).
[4]Contact length is .875 [22. 23]
[5]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[6]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -4 is used on AMP-O-LECTRIC Model K Machine, -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[7]HDM Applicator part number ending in -3 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Note: Phosphor bronze contacts should be used in high-temperature/humidity cycling applications.

Note: All part numbers are RoHS Compliant.

Contact Insertion Tool
(For Pins and Sockets)
Part No. 91002-1
IS 408-7347

Contact Extraction Tool
Part No. 318837-1
IS 408-4375

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

Material

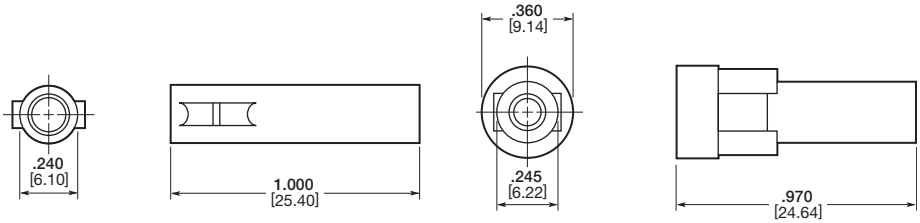
Housing—Nylon, natural color
Flammability Rating—
UL94-V-2

Related Product Data

Contacts—page 145

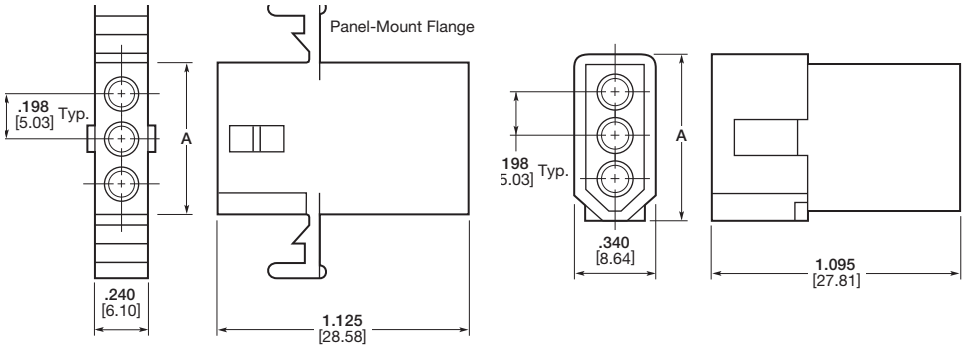
Product Specification—108-1038

1 Circuit



Receptacle **Plug**

2, 3, and 4 Circuit, In-Line



Receptacle **Plug**

No. of Circuits	A Dimension		Receptacle Part Numbers				Plug Part Numbers	
			Panel Mount		Free-Hanging			
	Receptacle	Plug	Without Detents	With Detents	Without Detents	With Detents	Panel Mount	Free-Hanging
1	—	—	—	—	—	770063-1	—	770064-1
2	**.540** 13.72	**.640** 16.26	—	770066-1[1,5]	—	770065-1[1,5] 770266[1,3,5]	770068-1[1]	770069-1[1]
3	**.670** 17.02	**.770** 19.56	—	770071-1	—	770070-1 770264-1[3]	770073-1	770074-1
4 (In-Line)	**.870** 22.10	**.970** 24.64	—	770076-1	—	770075-1	770077-1	770078-1
4 (Matrix)	**.443** 11.25	**.540** 13.71	—	—	—	770843-1	—	770842-1
5	**1.070** 27.18	**1.170** 29.72	—	—	—	770083-1 794015-1[3]	—	770084-1
6 (In-Line)	**1.268** 32.21	**1.378** 35.00	—	—	—	770782-1[4]	—	770892-1[4]
6 (Matrix)	**.435** 11.05	**.535** 13.59	770085-1	770087-1	770088-1	770086-1	770089-1	770090-1
9	**.670** 17.02	**.770** 19.56	770091-1	770093-1	770094-1	770092-1	770095-1[2] 770108-1	770096-1
12	**.870** 22.10	**.970** 24.64	770097-1	770099-1	770100-1	770098-1	770101-1	770102-1
15	**1.070** 27.18	**1.170** 29.72	770103-1	—	770105-1	—	770106-1	770107-1

[1].248 [6.30] centerline.
[2]Mounting ears at wire end.
[3]Tool removable.
[4]Positive lock.
[5]600 V AC or DC

Note: All part numbers are RoHS Compliant.

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.198 [5.03] Centerline spacing

Material

Housing—Nylon, natural color

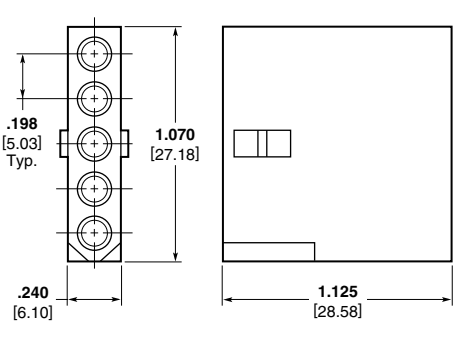
Flammability Rating—UL94V-2

Related Product Data

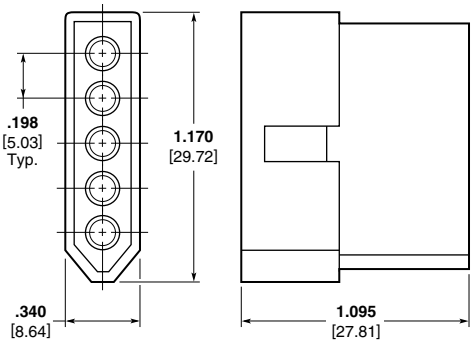
Contacts—page 145

Product Specification—108-1038

5 Circuit, In-Line

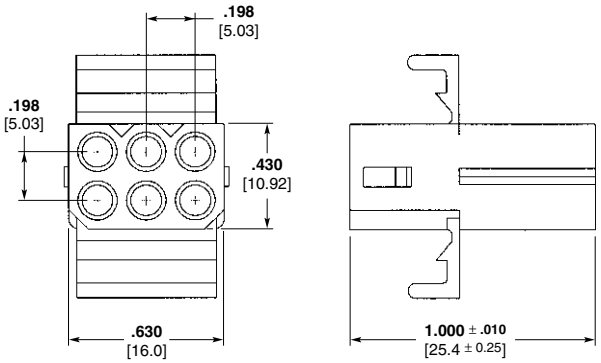


Receptacle (Free-Hanging)

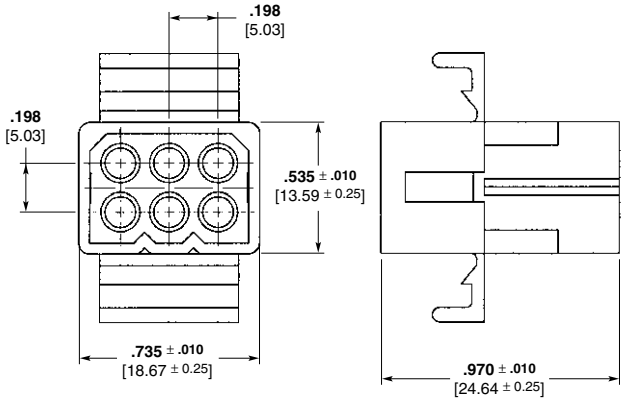


Plug (Free-Hanging)

4, 6, 9, 12, and 15 Circuit, Matrix



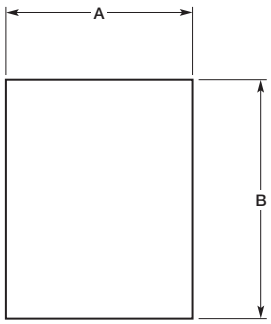
Receptacle



Plug

Recommended Panel Cutouts

Maximum panel thickness is .090 [2.29].



No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
2	**.312** 7.92	**.725** 18.42	**.375** 9.53	**.800** 20.32
3	**.312** 7.92	**.840** 21.34	**.375** 9.53	**.933** 23.70
4 (In-Line)	**.312** 7.92	**1.038** 26.37	**.375** 9.53	**1.131** 28.73
6	**.600** 15.24	**.718** 18.24	**.695** 17.65	**.750** 19.05
9	**.725** 18.42	**.828** 21.03	**.660** 16.76	**.937** 23.80
12	**.725** 18.42	**1.050** 26.67	**.760** 19.30	**1.155** 29.34
15	**.655** 16.64	**1.240** 31.50	**.760** 19.30	**1.343** 34.11

Note: The panel should be punched so that the housing enters in the same direction as the punch.

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

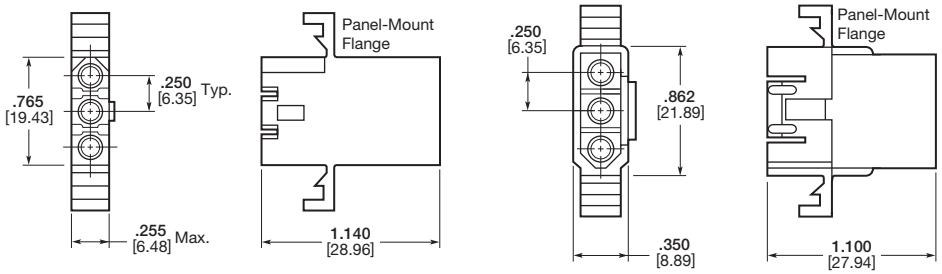
Material

Housing—Nylon, natural color
Flammability Rating—UL94V-2
Voltage Rating—600 V AC or DC

Related Product Data

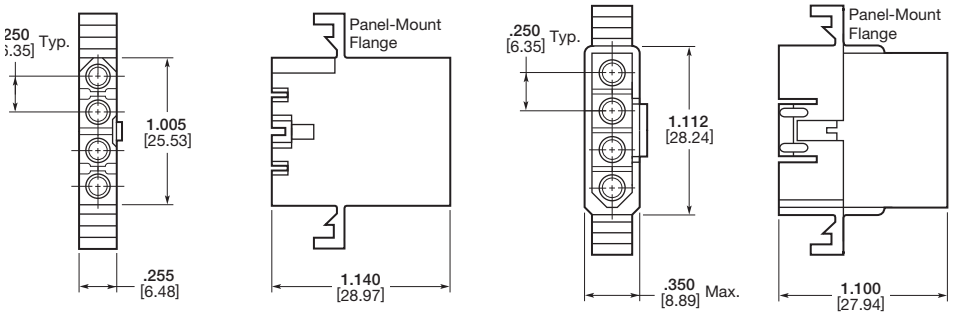
Contacts—page 145
Product Specification—108-1038

3 Circuit, In-Line



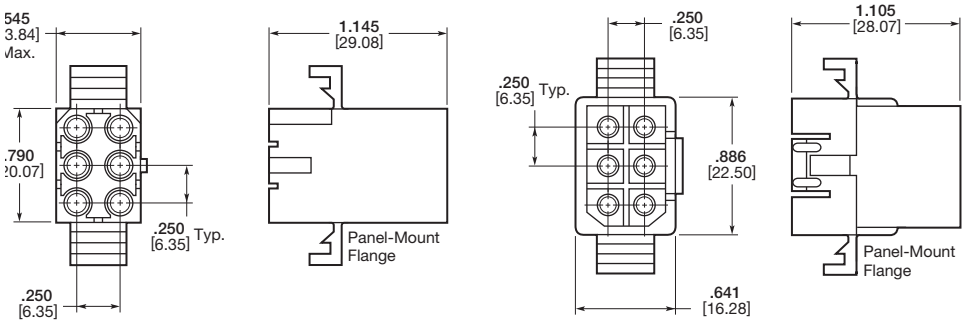
Receptacle **Plug**

4 Circuit, In-Line



Receptacle **Plug**

6 Circuit, Matrix

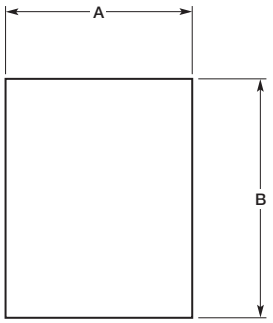


Receptacle **Plug**

Recommended Panel Cutouts

Maximum panel thickness is .062 [1.57].

Note: The panel should be punched so that the housing enters in the same direction as the punch.



No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
3	770269-1 770771-1[1]	770339-1	770338-1	770276-1
4	770329-1	770337-1	770330-1	770336-1
6	770372-1	770360-1	770373-1	770361-1

[1]Pre-bent mounting ears.

No. of Circuits	Panel Cutout Dimensions			
	Receptacle		Plug	
	A	B	A	B
3	**.310** 7.87	**.920** 23.37	**.365** 9.27	**1.022** 25.96
4	**.310** 7.87	**1.168** 29.67	**.365** 9.27	**1.270** 32.26
6	**.608** 15.44	**.946** 24.03	**.658** 16.71	**1.048** 26.62

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

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.093 [2.36] Commercial Pin and Socket Connectors (Continued)

Housings

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material

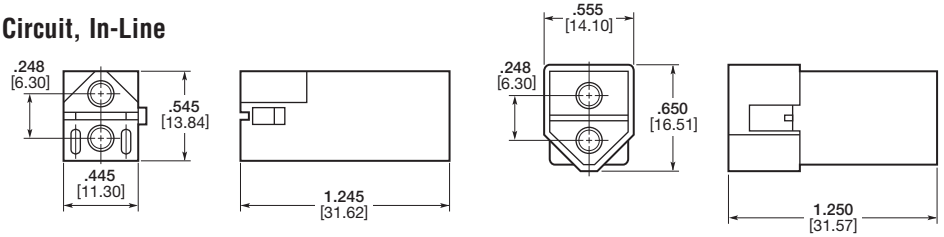
Housing—Nylon, natural color
Flammability Rating—UL94V-2
Voltage Rating—600 V AC or DC

Related Product Data

Contacts—page 145
Product Specification—108-1038

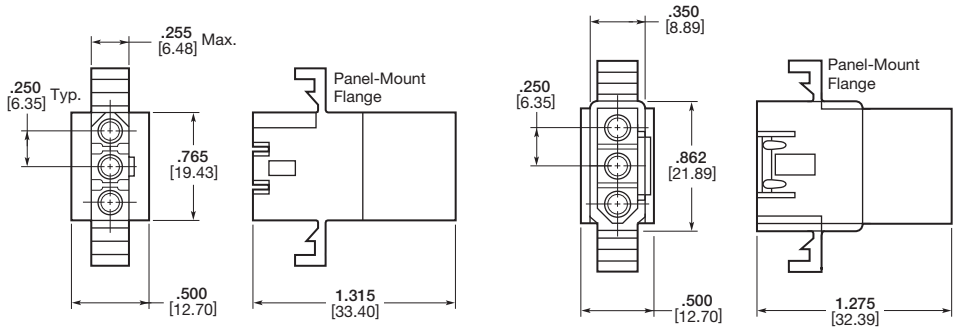
Dual Wire

2 Circuit, In-Line



Receptacle **Plug**

3 Circuit, In-Line



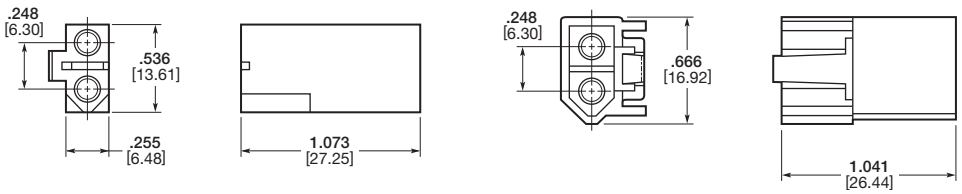
Receptacle **Plug**

No. of Circuits	Receptacle Part Numbers		Plug Part Numbers	
	Panel Mount	Free-Hanging	Panel Mount	Free-Hanging
2	—	770364-1[1]	—	770365-1[1]
3	770453-1[2]	770451-1	770452-1[2]	770450-1

[1].248 [6.30] centerline.
[2]See panel cutout dimensions on page 58.

Positive Lock

2, 3 and 4 Circuit, In-Line



Receptacle **Plug**

No. of Circuits	Receptacle Part Numbers	Plug Part Numbers
	Free-Hanging	Free-Hanging
2	770424-1[1]	770425-1[1]
3	770785-1	770783-1
4	770784-1	770810-1

[1].248 [6.30] centerline.

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

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Engineering Notes

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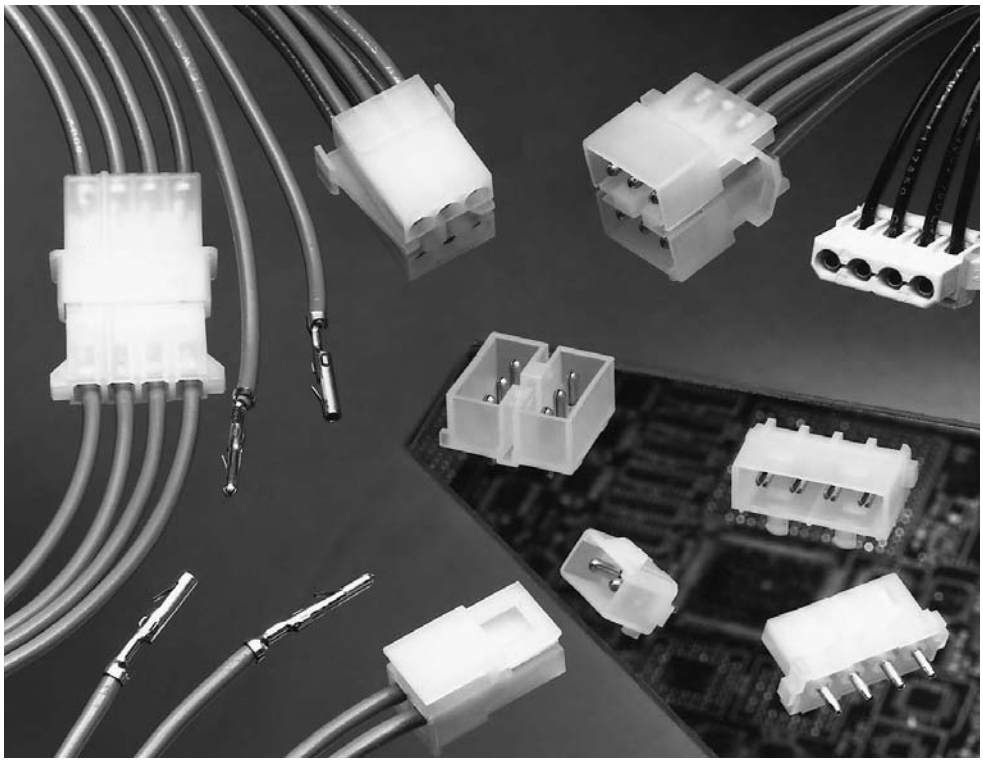
Commercial MATE-N-LOK Connectors

Product Facts

- Fully polarized nylon housings
- Easy cavity identification
- Locking devices are integral part of design. Connector halves will hold together under severe conditions of vibration and shock
- Built-in contact stabilization and self-aligning features
- Hot side egg-crate design for safety
- Precision molded to exacting tolerances
- Contacts accept a wire size range of 30-14 AWG [.05-2.0 mm²]
- Keying plug available
- "Clean" design contact—no sharp projections to impede insertion or damage housings
- Low insertion/extraction forces
- Contacts available in pre-tin or gold over nickel plated to fit the application requirements
- Wire-to-PC Board capability using pin or socket headers
- Solderability—Headers meet MIL-STD 202 method 208
- Four circuit PC Board-to-PC Board capability available by mating vertical socket header with either vertical, right-angle or surface mount pin header
- Four circuit insulation displacement connector (IDC) available
- Ultraviolet (UV) stable housings available in 1, 2 and 3 circuit
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189A



Performance Characteristics

The Commercial MATE-N-LOK Connector performance characteristics found on pages 151-152 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Dielectric Withstanding Voltage—1.5 KVAC between adjacent circuits

Insulation Resistance—500 megohms minimum initial between adjacent circuits

Voltage Rating—250 V AC or DC

Connector Mating—4 lb. max. per circuit

Connector Unmating—0.7 lb. min. per circuit

Contact Retention—15 lb. min. per contact

Durability—50 cycles, mating and unmating

Technical Documents

Product Specifications

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

108-49000 IDC Connectors

Application Specifications

114-1012 Commercial MATE-N-LOK Contacts

114-49001 IDC Connectors

Instruction Sheets

408-7209, 408-7166, 408-7200, 408-7201, 408-7215, 408-3186, 408-7300

Catalog 82181
Revised 4-08

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C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
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Commercial MATE-N-LOK Connectors (Continued)

Performance Characteristics (Continued)

Maximum Current—Maximum current rating of Commercial MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 105°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Printed Wiring Board Conductor Size—The finished trace conductor width and thickness should be maximized to allow for the greatest current-carrying capacity and heat dissipation.

Commercial MATE-N-LOK connectors also will withstand the following tests:

Vibration—10-55-10 cycles per minute at .06 inch total excursion

Physical Shock—18 drops, 50 G sawtooth at 11 milliseconds

Housing Panel Mount Retention—40 lb. min. 3 and 4 circuit
65 lb. min. 6, 9, 12, and 15 circuit

Housing Lock Strength with Positive Locking Devices Engaged—25 lb. min.

Thermal Shock— -55°C to +85°C

Temperature-Humidity Cycling—25°C to 65°C at 95 RH

Corrosion—48 hr. at 5% salt concentration

Related Product Data

Product Specifications

108-1000 Commercial MATE-N-LOK Connectors

108-1077 Commercial MATE-N-LOK PC Board Headers

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

Motor Mount Calculated Current Table

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
6	13.00	10.50	9.50	7.50	6.00	5.00	2.50
8	12.00	9.50	8.50	7.00	5.50	4.50	2.50
10	11.00	9.00	8.00	6.50	5.00	4.50	2.00
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
16	9.50	8.00	7.00	5.50	4.50	3.50	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

Calculated Current Table

Number of Circuits	Wire Gauge						
	14	16	18	20	22	24	30
1	19.00	15.50	14.00	11.00	9.00	7.50	4.00
2	18.00	14.50	13.00	10.50	8.50	7.00	4.00
3	16.00	13.00	12.00	9.50	7.50	6.50	3.50
4	15.00	12.50	11.00	9.00	7.00	6.00	3.00
6 Matrix	13.00	10.50	9.50	7.50	6.00	5.00	3.00
8	12.50	10.50	9.00	7.50	6.00	5.00	2.50
9	11.00	9.00	8.00	6.50	5.50	4.50	2.50
10	12.00	9.50	8.50	7.00	5.50	4.50	2.50
12	10.50	8.50	7.50	6.00	5.00	4.00	2.00
15	9.50	8.00	7.00	5.50	4.50	4.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

Note: If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm²	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	Force (Min.) N
30	.05	.50	4.00	2	9
28	.08	.75	3.50	3	13
26	.12	1.00	3.50	7	31
24	.2	1.5	3.50	10	44
22	.3	3	3.50	15	67
20	.5	4.5	3.00	20	89
18	.8	6	3.00	30	133
16	1.2	8	2.75	30	133
14	2.0	10	2.75	35	156

Note: This is the total resistance between wire crimps of a mated pin and socket.

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Commercial MATE-N-LOK Connectors (Continued)

Commercial MATE-N-LOK Connector Mating Combinations

Connector Part Number					Mating Connector Part Number							
							PC Board Headers					
								Vertical Pin			Vertical Socket	
Number of Circuits	Flammability Rating	Style	Housing Type	Connector Part No.	Housing Part No.	Housing Type	Plating	Standard Tail	Long Tail	Right-Angle Pin	Standard Tail	Long Tail
1	UL94V-2	In-Line	Socket: FH	1-480349-0	1-480350-0	Pin: FH	—	—	—	—	—	—
					1-480351-0	Pin: FH Positive Lock	—	—	—	—	—	—
			Socket: FH UV Stable	1-480400-0	1-480401-1	Pin: FH UV Stable	—	—	—	—	—	—
2	UL94V-2	In-Line	Socket: FH	1-480318-0	1-480319-0	Pin: FH	Pre-tin	350209-1	350422-1	794120-1	—	—
							Duplex[1]	1586512-2	—	—	—	—
			Socket: FH UV Stable	1-480393-1	1-480498-1	Pin: FH UV Stable	—	—	—	—	—	—
			Socket: FH Positive Lock	1-480720-0	794012-1	Pin: FH Positive Lock	Pre-tin	350539-1	350540-1	—	—	—
							Duplex[1]	1586530-2	—	—	—	—
3	UL94V-2	In-Line	Socket: FH	1-480303-0	1-480305-0	Pin: FH	Pre-tin	350210-1	350423-1	643488-1	—	—
							Duplex[1]	1586514-2	—	—	—	—
			Socket: PM	1-480304-0			—	—	—	—	—	—
			Socket: FH Positive Lock	1-480721-0	—	—	Pre-tin	350541-1	350542-1	—	—	—
							Duplex[1]	1586532-2	—	—	—	—
			Socket: FH UV Stable	1-480388-0	1-480387-0	Pin: FH UV Stable	—	—	—	—	—	—
4	**See next page for 4 position mating combinations**											
6	UL94V-2	Matrix	Socket: FH Positive Lock	1-480270-0	1-480340-0	Pin: FH Positive Lock	Pre-tin	1-380999-0	350425-1	—	—	—
					1-480271-0	Pin: MM Positive Lock	Duplex[1]	2-1586546-0	1586526-2	—	—	—
			Socket: PM Positive Lock	1-480273-0	1-480276-0	Pin: PM Positive Lock	Pre-tin	—	—	—	—	—
							Duplex[1]	—	—	—	—	—
			Pin: PM Positive Lock	1-480276-0	1-480273-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350641-1	350576-1
							Duplex[1]	—	—	—	—	—
8	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480283-0	1-480345-0	Pin: FH Positive Lock	Pre-tin	350212-1	350426-1	—	—	—
					1-480284-0	Pin: MM Positive Lock	Duplex[1]	1586518-2	1586528-2	—	—	—
9	UL94V-2	Matrix	Pin: PM Positive Lock	1-480277-0	1-480274-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350642-1	350577-1
							Duplex[1]	—	—	—	—	—
10	UL94V-2	Dual Row	Socket: FH Positive Lock	1-480285-0	1-480339-0	Pin: FH Positive Lock	Pre-tin	1-380991-0	350219-1	—	—	—
					1-480286-0	Pin: MM Positive Lock	Duplex[1]	2-1586544-0	—	—	—	—
12	UL94V-2	Dual Row	Socket: MM Positive Lock	1-480287-0	1-480288-0	Pin: MM Positive Lock	Pre-tin	350213-1	350220-1	—	—	—
							Duplex[1]	1586520-2	1586524-2	—	—	—
		Matrix	Pin: PM Positive Lock	1-480278-0	1-480275-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350643-1	350578-1
							Duplex[1]	—	—	—	—	—
15	UL94V-2	Matrix	Pin: PM Positive Lock	1-480324-0	1-480323-0	Socket: PM Positive Lock	Pre-tin	—	—	—	350644-1	350579-1
							Duplex[1]	—	—	—	—	—
16	UL94V-2	Dual Row	Socket: MM Positive Lock	1-480438-0	1-480439-0	Pin: MM Positive Lock	Pre-tin	350214-1	350427-1	—	—	—
							Duplex[1]	1586522-2	1586529-2	—	—	—

FH: Free-Hanging **PM: Panel Mount** **MM: Motor Mount**

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

Note: All part numbers are RoHS Compliant.

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Commercial MATE-N-LOK Connectors (Continued)

Commercial MATE-N-LOK 4 Position In-Line Mating Combinations

(**Note:** These connectors are used by the disk drive industry.)

Connector Part Number			Mating Connector Part Number											
					Socket Connectors				PC Board Pin Headers					
									Vertical			Right-Angle		
Flammability Rating	Connector Type	Connector Part No.	Housing Part No.	Housing Type	Plating	Insulation Displacement Connector	AWG	PC Board Vertical Socket Header	Standard Tail	Long Tail	Surface Mount	Standard	W/Fixed Belt	W/Fixed Belt Reverse Pol.
UL94V-2	Socket Housing Positive Lock	1-480772-0	—	—	Pre-tin	—	—	—	350543-1	350544-1	—	—	—	—
					Duplex[1]	—	—	—	1586534-2	1586536-2	—	—	—	—
	Socket Housing Detent Lock	1-480424-0	1-480426-0	Pin	Pre-tin	—	—	—	350211-1 770328-13	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1
					Duplex[1]	—	—	—	1586515-2	1586525-2	—	—	—	—
	Pin Housing Detent Lock	1-480426-0	1-480424-0	Socket	Pre-tin	770156-2	22	770997-1 794287-12	1586515-2	—	—	—	—	—
						770156-3	18							
						770156-4	20							
			1-480425-0	Socket PM		770156-5	16							
					Duplex[1]	770526-1	18	—	—	—	—	—	—	—
	Pin Housing Detent Lock High Temp	3-480426-0	3-480425-0	Socket High Temp	—	—	—	—	—	—	—	—	—	—
	Socket Header	770997-1 794287-12	1-480426-0	Pin	Pre-tin	—	—	—	350211-1	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1
UL94V-0	Insulation Displacement Connector (IDC)	770156-2 770156-3 770156-4 770156-5	1-480426-0	Pin	Pre-tin	—	—	—	350211-1	350424-1	770829-1	641737-1 770846-1	174804-1	174552-1
		770526-1			Duplex[1]	—	—	—	1586515-2	1586525-2	—	—	—	—
	Socket Housing	770827-1	794132-1	Pin	Pre-tin	—	—	—	—	—	—	1-641737-1	—	—
	Insulation Displacement Connector (IDC)	794036-1 794036-2 794036-3 794036-4	794132-1	—	Pre-tin	—	—	—	—	—	—	1-641737-1	—	—
	Right-Angle Pin Header	1-641737-1	770827-1	Socket	Pre-tin	794036-1	18	—	794236-1	—	—	—	—	—
						794036-2	20							
						794036-3	22							
						794036-4	16							

PM: Panel Mount

1Duplex Finish — Plated with .000030 [.000762] min. gold in matting area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

2Surface Mount Compatible.

3With Drainholes

Note: All part numbers are RoHS Compliant.

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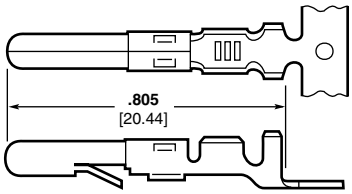
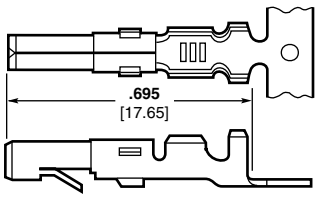
Commercial MATE-N-LOK Connectors (Continued)

Contacts

Pin diameter .084 [2.13]
Stock thickness .012 [.305]
These contacts are to be used in Commercial MATE-N-LOK housings **only**.



Pin



Socket

Related Product Data

Product Specification
108-1000 Commercial MATE-N-LOK Connectors

Application Specification
114-1012 Commercial MATE-N-LOK Contacts

Performance Characteristics—pages 151-152
Housings—pages 157-159
Technical Documents—pages 151 and 205-206
Application Tooling—pages 207-210

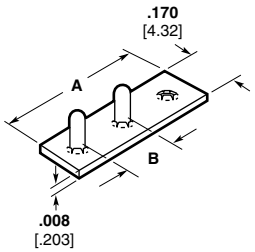
Wire Size Range AWG [mm²]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
30-22 [.05-.3]	**.040-.075** 1.02-1.91	Brass, Pre-tin	350079-1	61174-1	350078-1	61173-1	466426-1[3] 466426-2[3] 466426-3[3]	91515-1
		Phos. Brz., Pre-tin	350079-4	—	350078-4	61173-4		
		Brass, Gold[1]	350079-5	61174-5	350078-5	61173-5		
24-18 [.2-.8]	**.060-.100** 1.52-2.54	Brass, Pre-tin	61116-1	60618-1	61314-1	60617-1	466320-1[3] 466320-2[3] 466320-4[3]	91512-1 91528-1[4]
		Phos. Brz., Pre-tin	61116-4	60618-4	61314-4	60617-4		
		Brass, Gold[1]	61116-5	60618-5	61314-5	60617-5		
		Phos. Brz., Select Gold[2]	61116-6	60618-6	61314-6	60617-6		
		Brass, Select Gold[2]	61116-7	—	61314-7	—		
20-14 [.5-2.0]	**.100-.130** 2.54-3.30	Brass, Pre-tin	61118-1	60620-1	61117-1	60619-1	687763-1[3] 687763-2[3] 687763-6[3]	91504-1
		Phos. Brz., Pre-tin	61118-4	60620-4	61117-4	60619-4		
		Brass, Gold[1]	61118-5	60620-5	61117-5	60619-5		
		Phos. Brz., Gold[1]	61118-6	—	61117-6	60619-7		
		Brass, Select Gold[2]	61118-7	—	61117-7	—		
(2) 18 [.8] or (1) 18 [.8] and (1) 16 [1.2]	(2) **.115 Max.** 2.92 (stacked)	Brass, Pre-tin	350558-1	350639-1	350557-1	—	687898-1[3] 687898-2[3] 687898-4[3]	91504-1
		Phos. Brz., Pre-tin	350558-4	—	350557-4	350638-4		

[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[4]Use Hand Tool No. 91528-1 for .043-.075 [1.09-1.90] insulation diameter.
Notes:
1. Extraction Tools: Pins — No. **1-305183-1** (IS 408-7158); Sockets — No. **1-305183-2** (IS 408-7158); Pins and Sockets — No. **465644-1** (IS 408-7211)
2. Insertion Tools: No. **455830-1** (IS 408-7984)

Commoning Tabs

Material and Finish

Brass, tin plated
Stock thickness .008 [.203]



Number of Holes	Dimensions		Part Number
	A	B	
2	**.377** 9.58	**.203** 5.16	60843-1
2	**.355** 9.02	**.195** 4.95	350444-1
3	**.579** 14.71	**.203** 5.16	60842-1
3	**.550** 13.97	**.195** 4.95	350444-2

Note: Commoning tabs are designed to be used with pin housings.

Note: All part numbers are RoHS Compliant.

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Contacts

Pin diameter .084 [2.13]
Stock thickness .012 [.305]
These contacts are to be used in Commercial MATE-N-LOK housings **only**.

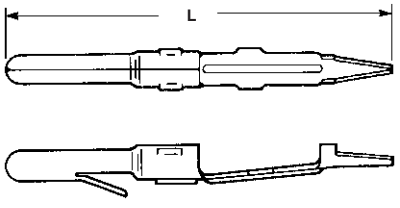
Related Product Data

Product Specification
108-1000 Commercial MATE-N-LOK Connectors

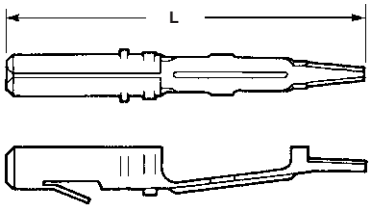
Application Specification
114-1012 Commercial MATE-N-LOK Contacts

Performance Characteristics—pages 151-152
Housings—pages 157-159
Technical Documents—pages 151 and 205-206
Application Tooling—pages 207-210

PC Board Contacts



Pin



Socket

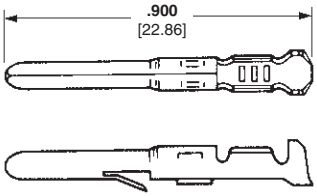
Type of Contact	L Dim.		Material & Finish	Part Numbers	
	Pin	Socket		Pin	Socket
				Loose Piece	Loose Piece
PC Board	**1.110** [28.19]	**1.010** [25.65]	Phos. Brz., Pre-tin	61518-1[1]	61320-1[1]
	1.210 [30.73]	**1.110** [28.19]	Phos. Brz., Pre-tin	350074-1[2]	350073-1[2]

[1]For .062 [1.57] max. board thickness — Board hole size .057 [1.45]
[2]For .125 [3.14] max. board thickness — Board hole size .057 [1.45]

Grounding Pin

(.095 [2.41] longer than standard pin)

(Mate first, break last, not for interrupting current)

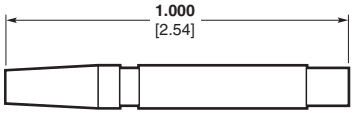


Wire Size Range AWG [mm²]	Ins. Dia. Range	Material & Finish	Contact Part Numbers		HDM Applicator Part No.	Hand Tool Part No.
			Strip Form	Loose Piece		
24-18 [.2-.8]	**.060-.100** 1.52-2.54	Brass, Pre-tin	61527-2	—	466320-1[1] 466320-2[1] 466320-4[1]	91512-1

[1]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine; -3, -4, or -6 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Keying Plug

IS 408-7582



Part Number
200821-1
Note: Keying plug snaps into socket housing

Material

Housing — Nylon, natural color
Flammability Rating — UL94V-2

Note: All part numbers are RoHS Compliant.

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Commercial MATE-N-LOK Connectors (Continued)

Housings

Free-Hanging

.200 [5.08] Centerline spacing

Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

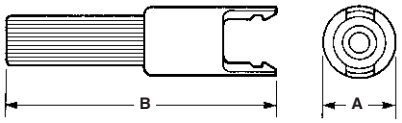
Related Product Data

Product Specification

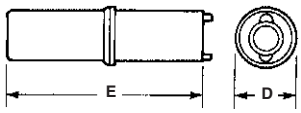
108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 151-152
Contacts—pages 155-156
Commoning Tabs—page 155
Keying Plug—page 156
Technical Documents—pages 151 and 205-206
Mating Pin Headers—pages 161-164
Mating Socket Headers—page 162
Mating IDC—page 163

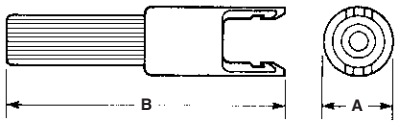
1 Circuit



Pin Housing (Cap) Detent Lock

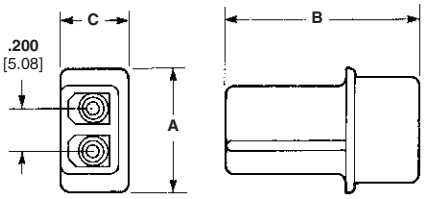


Socket Housing (Plug)

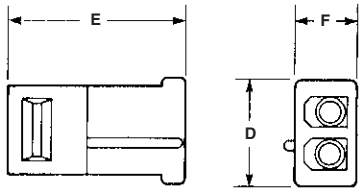


Pin Housing (Cap) Positive Lock

2, 3 and 4 Circuit, In-Line



Pin Housing (Cap)



Socket Housing (Plug)

Number of Circuits	Dimensions						Part Numbers	
	A	B	C	D	E	F	Pin Housing (Cap)	Socket Housing (Plug)
1	**.300** 7.62	**1.200** 30.48	—	**.260** 6.60	**.870** 22.10	—	1-480350-0[1]	1-480349-0
	.300 7.62	**1.240** 31.49	—	**.260** 6.60	**.870** 22.10	—	1-480351-0[2]	1-480349-0
	.300 7.62	**1.325** 33.65	—	**.260** 6.60	**.995** 25.27	—	1-480401-0[1,3]	1-480400-0[3]
2	**.610** 15.49	**.930** 23.62	**.330** 8.38	**.530** 13.46	**.860** 21.84	**.295** 7.49	1-480319-0[1,5]	1-480318-0[5]
	.610 15.49	**.930** 23.62	**.330** 8.38	**.530** 13.46	**.860** 21.84	**.295** 7.49	1-480498-1[1,3,5]	1-480393-1[3,5]
3	**.810** 20.57	**.930** 23.62	**.325** 8.25	**.825** 20.95	**.850** 21.60	**.290** 7.37	1-480305-0[1,5]	1-480303-0[5]
	.810 20.57	**.930** 23.62	**.325** 8.25	**.825** 20.95	**.850** 21.60	**.290** 7.37	1-480387-0[1,3,5]	1-480388-0[3,5]
4	**1.010** 25.65	**.930** 23.62	**.330** 8.38	**1.030** 26.16	**.850** 21.60	**.310** 7.88	1-480426-0[1,5,6]	1-480424-0[5,6]
	—	—	—	**1.030** 26.16	**.850** 21.60	**.310** 7.88	794132-1[4,5,6]	770827-1[4,5,6]

[1]Detent lock
[2]Positive lock
[3]UV Stable black color
[4]Housing Material UL94V-0 rated
[5]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].
[6]Used by the disk drive industry.

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

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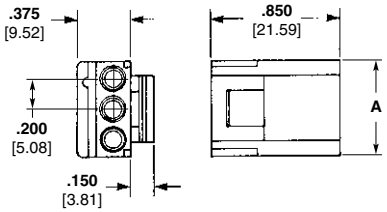
Commercial MATE-N-LOK Connectors (Continued)

Housings
Free-Hanging, Positive Lock

Material
Housing—Nylon, natural color
Flammability Rating—UL94V-2

2, 3, and 4 Circuit, In-Line
.200 [5.08] Centerline spacing

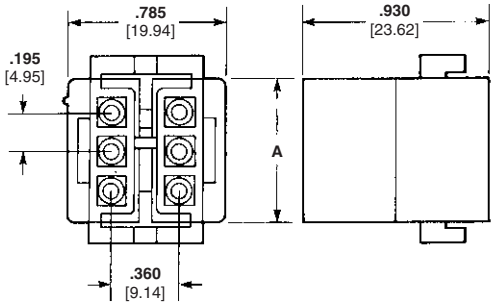


Socket Housing (Plug)

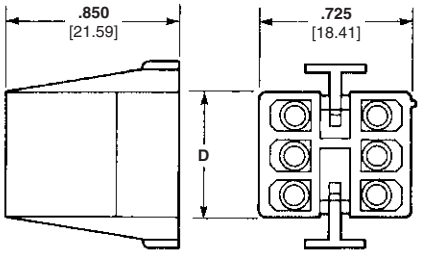
Number of Circuits	A Dim.	Part Numbers		
		Socket Housing (Plug)	Mates with Pin Headers	Mates with Cap Housing
2	**.435** 11.04	1-480720-0	350539, 350540	794012-1
3	**.630** 16.00	1-480721-0	350541	—
4	**.830** 21.09	1-480722-0[1]	350543[1], 350544[1]	—

[1]Used by the disk drive industry.

6 Circuit, Dual Row

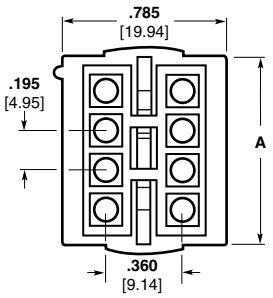


Pin Housing (Cap)

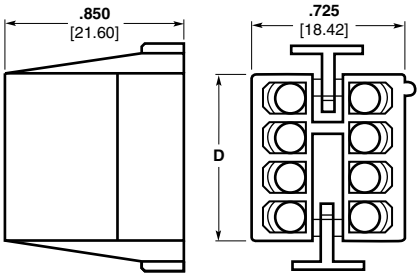


Socket Housing (Plug)

8 and 10 Circuit, Dual Row



Pin Housing (Cap)



Socket Housing (Plug)

Number of Circuits	Dimensions		Part Numbers	
	A	D	Pin Housing (Cap)	Socket Housing (Plug)
6	**.705** 17.91	**.610** 15.49	1-480340-0	1-480270-0[1]
8	**.900** 22.86	**.805** 20.44	1-480345-0	1-480283-0[1]
10	**1.095** 27.81	**1.000** 25.40	1-480339-0	1-480285-0[1]

[1]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

Note: All part numbers are RoHS Compliant.

Related Product Data

Product Specification
108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 151-152
Contacts—pages 155-156
Commoning Tabs—page 155
Keying Plug—page 156
Technical Documents—pages 151 and 205-206
Mating Headers—pages 161-164

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Commercial MATE-N-LOK Connectors (Continued)

Housings

Panel Mount, Positive Lock

Material

Housing—Nylon, natural color

Flammability Rating—UL94V-2

Related Product Data

Product Specification

108-1000 Commercial MATE-N-LOK Connectors

Performance Characteristics—pages 151-152
Contacts—pages 155-156
Commoning Tabs—page 155
Keying Plug—page 156
Technical Documents—pages 151 and 205-206
Mating Socket Headers—page 162
Mating IDC—page 163

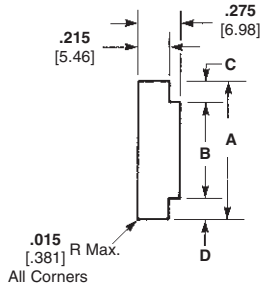
Recommended Panel Cutout for Panel Mount Socket Housing

View is from socket housing entry side

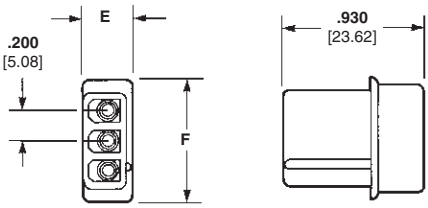
Mounting Information

1. Recommended panel thickness—.025-.065 [.635-1.65].
2. Both locking legs are to be squeezed together and the housing is to be inserted "straight-in", as opposed to a rocking manner.
3. The panel should be punched so that the housing enters the panel in the same direction as the punch.
4. The panel must not have any material (paint, porcelain, etc.) applied in the mounting hole area that would decrease the retention of the housing in the panel.
5. If the two items above are not complied with, the "A" dimension should be reduced .020 [5.08] for proper retention.

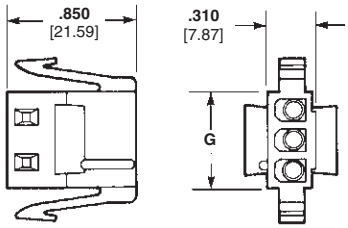
3 and 4 Circuit, In-Line



3 and 4 Circuit, In-Line

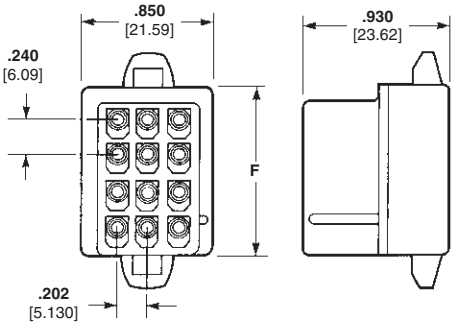


Pin Housing (Cap)

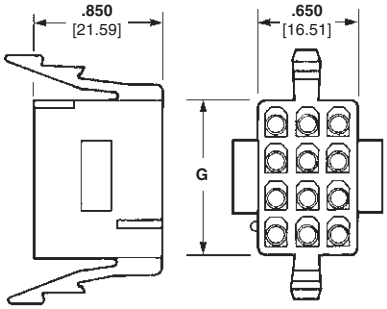


Socket Housing (Plug)

6, 9, 12 and 15 Circuit, Matrix



Pin Housing (Cap)



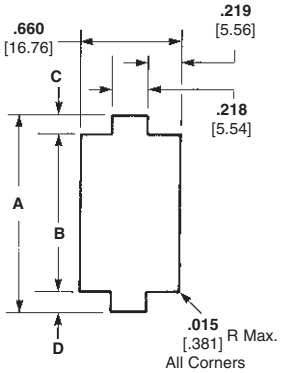
Socket Housing (Plug)

Number of Circuits	Dimensions E	F	G	Part Numbers Pin Housing (Cap)	Socket Housing (Plug)
3	**.325** 8.26	**.810** 20.57	**.630** 16.00	1-480305-0[2]	1-480304-0
4	**.330** 8.38	**1.010** 25.65	**.825** 20.96	1-480426-0[2,4] 3-480426-0[1,2,4]	1-480425-0[4] 3-480425-0[1,4]
6	—	**.665** 16.89	**.555** 14.10	1-480276-0[3]	1-480273-0
9	—	**.905** 22.99	**.795** 20.19	1-480277-0[3]	1-480274-0
12	—	**1.145** 29.08	**1.045** 26.54	1-480278-0[3]	1-480275-0
15	—	**1.382** 35.10	**1.280** 32.51	1-480324-0[3]	1-480323-0

[1]Housing material has 125°C temperature rating
[2]Detent lock
[3]Positive lock
[4]Used by disk drive industry

Note: All part numbers are RoHS Compliant.

6, 9, 12 and 15 Circuit, Matrix



Number Circuits	Dimensions A	B
3	**.890** 22.61	**.645–.635** 16.38–16.13
4	**1.100** 27.94	**.845–.835** 21.46–21.21
6	**.840** 21.34	**.575–.570** 14.61–14.48
9	**1.075** 27.31	**.815–.810** 20.70–20.57
12	**1.320** 33.53	**1.055–1.050** 26.80–26.67
15	**1.550** 39.37	**1.290–1.285** 32.77–32.64

Note: Dimensions "C" and "D" are to be equal.

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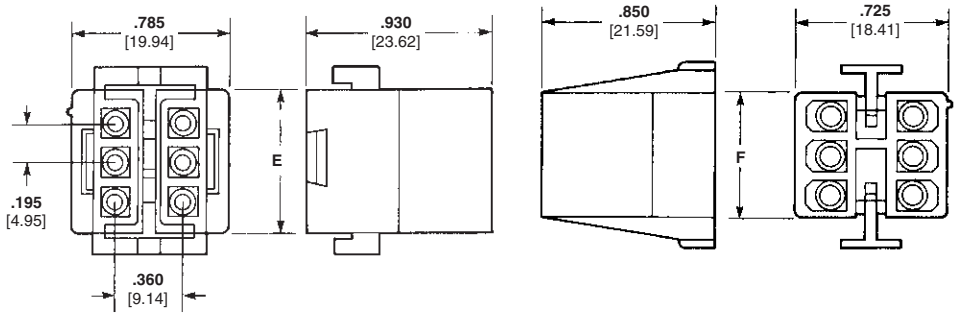
Commercial MATE-N-LOK Connectors (Continued)

Motor Mount, Positive Lock

6, 8, 10, 12 and 16 Circuit, Dual Row



Pin Housing (Cap) Socket Housing (Plug)

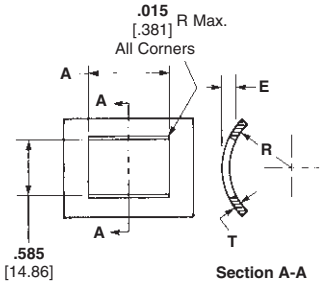
Number of Circuits	Dimensions E	Dimensions F	Part Numbers Pin Housing (Cap) UL94V-2 Nylon, Natural Color	Part Numbers Socket Housing (Plug) UL94V-2 Nylon, Natural Color
6	**.705** 17.90	**.610** 15.49	1-480271-0	1-480270-0[1]
8	**.900** 22.86	**.805** 20.45	1-480284-0	1-480283-0[1]
10	**1.095** 27.81	**1.000** 25.4	1-480286-0	1-480285-0[1]
12	**1.290** 32.77	**1.195** 30.35	1-480288-0	1-480287-0
16	**1.680** 42.67	**1.585** 40.26	1-480439-0	1-480438-0

[1]Housing accepts double wire applications where individual insulation diameters do not exceed .115 [2.92].

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

Recommended Panel Cutout for Motor Mount Pin Housing

View is from pin housing entry side.



Section A-A

Note: Motor mount housings may be used in flat panels

Number of Circuits	A Dim.
6	**.715** 18.16
8	**.910** 23.11
10	**1.105** 28.07
12	**1.300** 33.02
16	**1.690** 42.93

Mounting Information

1. Recommended panel thickness "E" is .040-.100 [1.02-2.54] and is dependent on "T" and "R".
2. The pin housing must be inserted in a rocking manner.
3. The panel must be punched so that the housing enters the panel in the same direction as the punch.

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Commercial MATE-N-LOK Connectors (Continued)

PC Board Vertical Pin Headers

Material

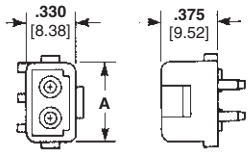
Housing — Nylon, natural color
Flammability Rating — UL94V-2
Contacts — Phosphor bronze
Solder tail diameter .062 [1.57]

Related Product Data

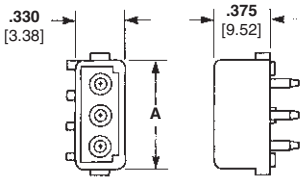
Product Specifications
108-1077 Commercial MATE-N-LOK PC Board Headers

Performance Characteristics—pages 151-152
Technical Documents—pages 151 and 205-206
Mating Socket Housings—pages 157-160
Mating Socket Headers—page 162
Mating IDC—page 163

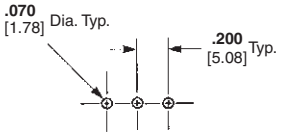
2, 3, and 4 Circuit, In-Line



Positive Lock

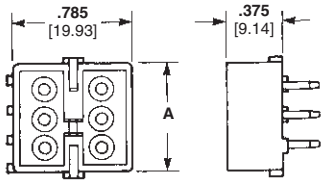


Detent Lock

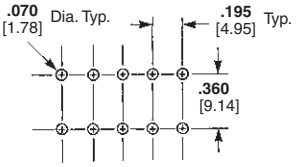


Recommended PC Board Hole Layout Mounting Dimensions

6, 8, 10, 12 and 16 Circuit, Dual Row



Positive Lock



Recommended PC Board Hole Layout Mounting Dimensions

Number of Circuits	A Dim.	Type Lock	Finish	Part Numbers: Standard[2] Tail	Part Numbers: Long[3] Tail	Mates with Socket Housing Part Number
2	.515 13.09	Positive	Pre-tin	350539-1	350540-1	1-480720-0
			Duplex[1]	1586530-2	—	
		Detent	Pre-tin	350209-1	350422-1	1-480318-0
			Duplex[1]	1586512-2	—	
3	.715 18.17	Positive	Pre-tin	350541-1	350542-1	1-480721-0
			Duplex[1]	1586532-2	—	
		Detent	Pre-tin	350210-1	350423-1	1-480303-0
			Duplex[1]	1586514-2	—	
4	.915 23.24	Positive	Pre-tin	350543-1[5]	350544-1[5]	1-480722-0[5]
			Duplex[1]	1586534-2[5]	1586536-2[5]	
		Detent	Pre-tin	350211-1[5] / 794236-1[5,8]	350424-1[5]	1-480424-0[4,5]
			Post-tin	1586627-1[5,6] / 1-1586627-1[5,6,7]		
			Duplex[1]	1586515-2[5]	1586525-2[5]	
6	.705 17.91	Positive	Pre-tin	1-380999-0	350425-1	1-480270-0
			Duplex[1]	2-1586546-0	1586526-2	
8	.900 22.86	Positive	Pre-tin	350212-1	350426-1	1-480283-0
			Duplex[1]	1586518-2	1586528-2	
10	1.095 27.81	Positive	Pre-tin	1-380991-0	350219-1	1-480285-0
			Duplex[1]	2-1586544-0	—	
12	1.290 32.77	Positive	Pre-tin	350213-1	350220-1	1-480287-0
			Duplex[1]	1586520-2	1586524-2	
16	1.680 42.68	Positive	Pre-tin	350214-1	350427-1	1-480438-0
			Duplex[1]	1586522-2	1586529-2	

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use standard tail for .062 [1.57] thick PC Board.
[3]Use long tail for .125 [3.18] thick PC Board.
[4]Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).
[5]Used by the disk drive industry.
[6]With drain holes.
[7]Tube loaded.
[8]Housing material UL94V-0 rated.

Note: All part numbers are RoHS Compliant.

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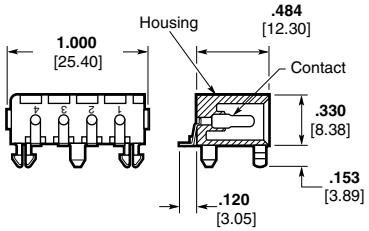
Commercial MATE-N-LOK Connectors (Continued)

PC Board Surface Mount Right-Angle Pin Header

Material and Finish

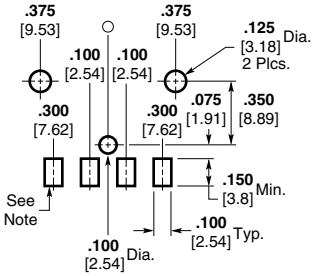
Housing — Nylon, black color
Flammability Rating — UL94V-2
Contact — Phosphor bronze, pre-tin
Solder tail width .052 [1.32]

4 Circuit, In-Line



Part Number
770829-1

Notes:
1. Mating parts include socket housings, a vertical PC Board socket header below and the insulation displacement connectors (IDC).
2. Used by the disk drive industry.



Note: .010 [.25] min. thick solder paste, 63/27 tin

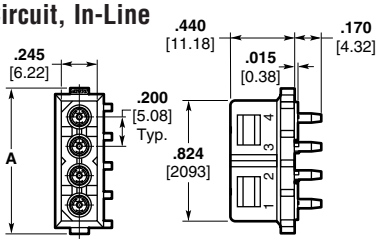
Recommended PC Board Layout
.062 [1.57] thick PC Board

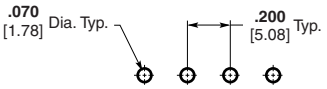
PC Board Vertical Socket Headers

Material

Housing — Nylon, natural color
Flammability Rating — UL94V-2
Contacts—Phosphor bronze
Solder tail diameter .062 [1.57]

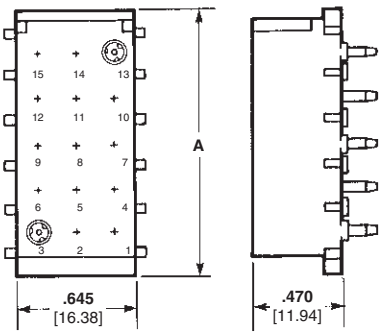
4 Circuit, In-Line

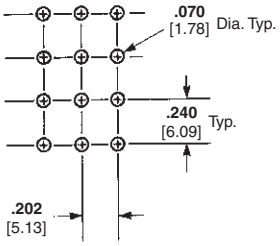




Recommended PC Board Hole Layout
.062 [1.57] thick PC Board

6, 9, 12 and 15 Circuit, Matrix





Recommended PC Board Hole Layout
.062 [1.57] thick PC Board

Number of Circuits	A Dim.	Finish	Part Numbers		Mates with Pin Housing Part Number
			Standard Tail[5]	Long Tail[6]	
4	**1.000** 25.40	Pre-tin	770997-1[3]	—	1-480426-0[2,3]
			794285-1[3,7]	—	
			794287-1[3,4,8]	—	
6	**.720** 18.29	Pre-tin	350641-1	350576-1	1-480276-0
		Duplex[1]	1586539-2	—	
9	**.960** 24.39	Pre-tin	350642-1	350577-1	1-480277-0
12	**1.200** 30.49	Pre-tin	350643-1	350578-1	1-480278-0
15	**1.440** 36.58	Pre-tin	350644-1	350579-1	1-480324-0

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Other mating connectors include vertical, right-angle and surface mount PC Board pin headers.
[3]Used by the disk drive industry.
[4]Surface mount compatible.
[5]Use standard tail for .062 [1.57] thick PC Board.
[6]Use long tail for .125 [3.18] thick PC Board.
[7]Low Mating Force
[8]High Temperature
Note: All part numbers are RoHS Compliant.

Related Product Data

Product Specifications
108-1077 Commercial MATE-N-LOK PC Board Headers
Performance Characteristics—pages 151-152
Technical Documents—pages 151 and 205-206
Mating Pin Housings—pages 157-160
Mating Pin Headers—pages 161-164
Mating Socket Housings—pages 157-160
Mating Socket Headers—page 162
Mating IDC—page 163

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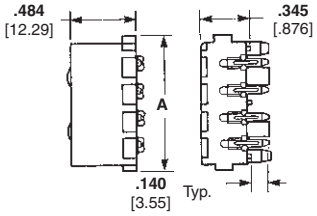
Commercial MATE-N-LOK Connectors (Continued)

PC Board Right-Angle Pin Headers

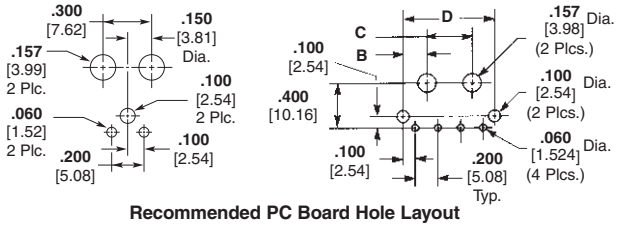
Material and Finish

Contact — Phosphor bronze, pre-tin
Solder tail width .052 [1.32]

2, 3, and 4 Circuit, In-Line



2, 3, and 4 Circuit



Recommended PC Board Hole Layout
.062 [1.57] thick PC Board

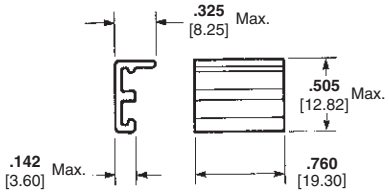
Number of Circuits	Dimensions A	B	C	D	Housing Material	Part Numbers	Mates with Socket Housing Part Number
2	**.600** 15.24	—	**.300** 7.62	—	UL94V-2 Nylon Natural Color	794120-1	1-480318-0
3	**.800** 20.32	**.150** 3.81	**.300** 7.62	**.600** 15.24	UL94V-0 Nylon	643488-1	1-480303-0
4	**1.000** 25.40	**.200** 5.08	**.400** 10.16	**.800** 20.32	UL94V-2 Nylon, Natural Color	641737-1[3] 770846-1[1,3]	1-480424-0[2,3]
					UL94V-0 Nylon	1-641737-1[3]	770827-1[2,3]

[1]Surface Mount Compatible. [2]Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC). [3]Used by the disk drive industry.

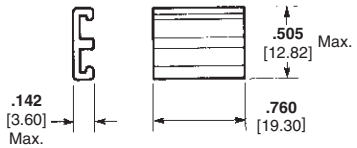
Dust Covers

Material

Housing — Polyester, white color
Flammability Rating — UL94V-2



For Feed-To Wiring
Part Number 770232-1



For Feed-Through Wiring
Part Number 770233-1

Note: These parts are used with the insulation displacement connectors below.

Insulation Displacement Connectors (IDC)

Material

Housing — Nylon
Contact — Phosphor bronze

Related Product Data

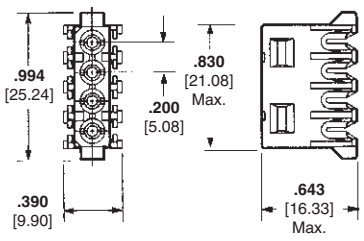
Used by the disk drive industry.

Product Specifications
108-1077 Commercial MATE-N-LOK PC Board Headers
108-49000 IDC Connectors

Application Specification
114-49001 IDC Connectors

Performance Characteristics— pages 151-152
Technical Documents— pages 151 and 205-206
Mating Socket Housings— pages 157-160
Mating Pin Housings— pages 157-160
Mating Pin Headers— pages 161-164

4 Circuit, In-Line



Socket Assembly (Plug)

Wire Size Range AWG [mm²]	Color Code	Finish	Part Number UL94V-2	Part Number UL94V-0	Mates with Part Numbers
22 [.3]	Red	Pre-tin	770156-2	794036-3	1-480426-0** 350211-1 350211-2 350424-1 350424-2 641737-1 1-641737-1 770827-1 770829-1 770846-1
20 [.5]	Yellow	Pre-tin	770156-4	794036-2	
18 [.8]	Orange	Pre-tin	770156-3	794036-1	
16 [1.2]	Blue	Pre-tin	770156-5*	794036-4	

*Application Tooling: Arbor Tool 91085-2 uses head 231920-2. **Pin Housing

Notes:
1. Insulation diameter .095 [2.41] max.
2. Application Tooling
Power Unit No. **91112-2** (IS 408-7763) uses Head No. **231920-2** (IS 408-9330) and Hand Tool Handle No. **58074-1** (IS 408-6790) uses Terminating Head No. **231894-1**(IS 408-3186)

Note: All part numbers are RoHS Compliant.

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Commercial MATE-N-LOK Connectors (Continued)

PC Board Right-Angle Pin Header with Fix Belt

Material

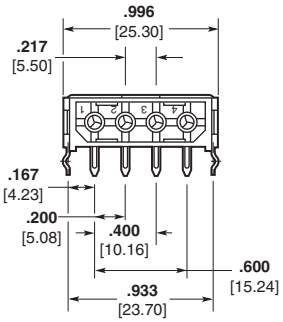
Housing — Thermoplastic
Flammability Rating — UL94V-2
Contacts — Copper Alloy

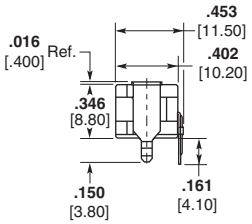
Related Product Data

Used by the disk drive industry

Product Specification
108-5155

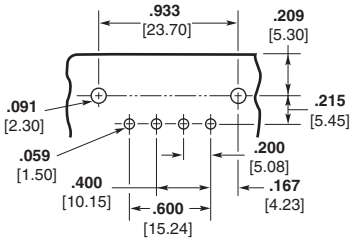
4 Circuit, In-Line





Part No. 174552-1

Notes: Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).



Recommended PC Board Hole Layout
.062 [1.57] thick PC Board

PC Board Right-Angle Pin Headers with Fix Belt

Reverse Polarization

Material and Finish

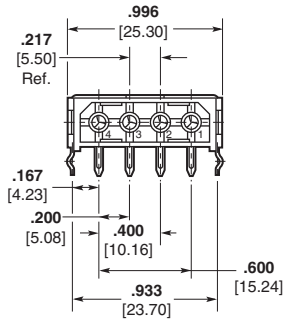
Housing — Nylon
Flammability Rating — UL94V-2
Contacts — Tin plated, Copper alloy

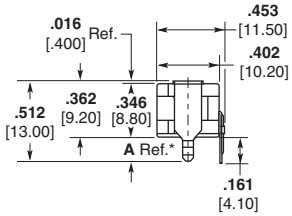
Related Product Data

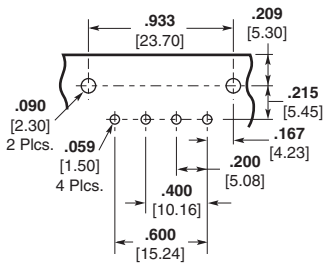
Used by the disk drive industry

Product Specification
108-5155

4 Circuit, In-Line







Part No.	A Dim.*	Description
174804-1	.150 3.80	Long Clamp with Kink

Part No. 174804*

Recommended PC Board Hole Layout
.062 [1.57] thick PC Board

Notes: Mates with socket housing Part No. 1-480424-0. Other mating connectors include a vertical PC Board socket header and the insulation displacement connectors (IDC).

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

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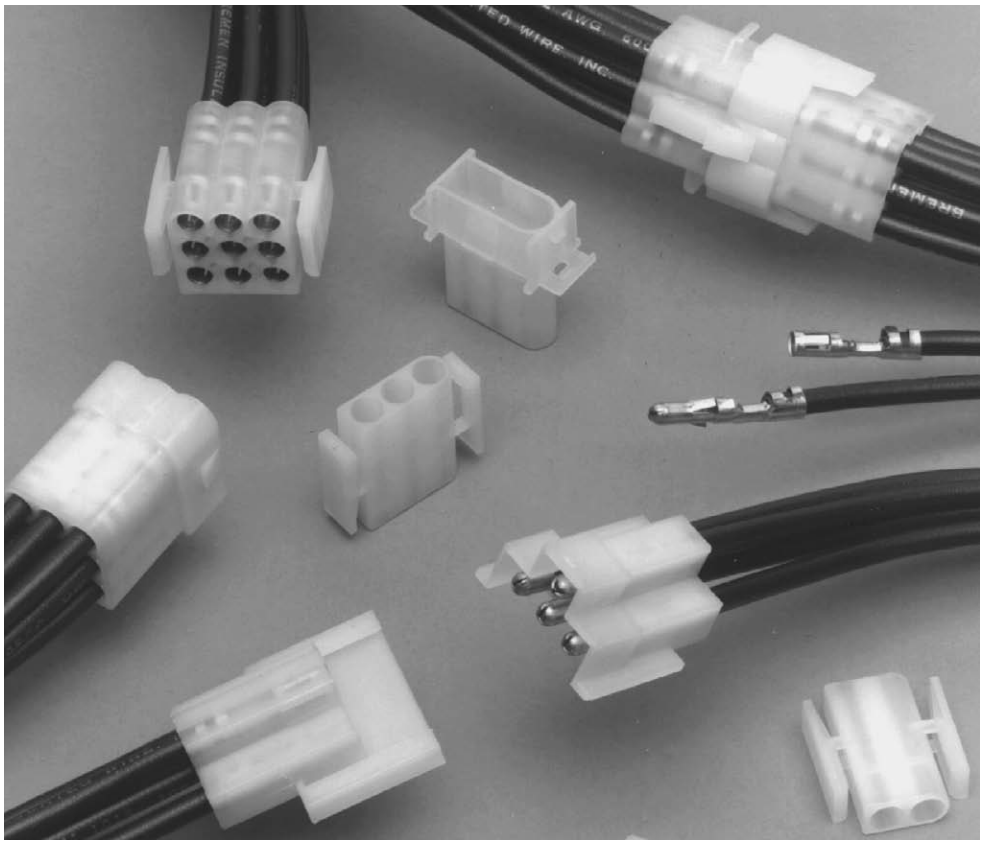
.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline

Product Facts

- **Available in 2, 3 and 9 circuit configurations for panel mounting; 4 and 9 circuit configurations for free-hanging applications**
- **Standard natural nylon housings**
- **Housings fully polarized**
- **Contacts fully protected in housings**
- **Contacts accept wire size range 20-10 AWG [.5-5.0 mm²] with insulation diameters from .100 [2.54] to .180 [4.57]**
- **Low insertion/extraction forces**
- **Dual locking lances provide optimum contact stability**
- **Extraction tool removes both pins and sockets**
- **Contacts are on .240 [6.09] centerline spacing**
- **Not for interrupting current**
- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR 7189A**



Performance Characteristics

The .140 MATE-N-LOK Connector performance characteristics found on this page are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Dielectric Withstand Voltage—3.0 KVAC between adjacent circuits

Insulation Resistance—1000 megohms minimum initial between adjacent circuits

Voltage Rating—600 V AC or DC

Connector Mating—4.5 lb. max. per circuit

Connector Unmating—.8 lb. min. per circuit

Contact Retention—30 lb. min.

Durability—25 cycles, mating and unmating

Thermal Shock— -55°C to +85°C

Temperature-Humidity Cycling—25°C to 65°C at 95 RH

Maximum Current—Maximum current rating of .140 MATE-N-LOK Connectors is limited by the maximum operating temperature of the housings which is 105°C and the temperature rise of the contacts which is 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current-carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Technical Documents

Product Specification

108-1032 .140 Diameter MATE-N-LOK Connectors

Application Specification

114-1007 .140 Diameter MATE-N-LOK Contacts

Wire Size AWG	Wire Size mm²	Termination Resistance: Test Current (Amps)	Termination Resistance: Resistance Milliohms (Max. Init.)	Contact Crimp Tensile Force: Force (Min.) lbs.	Contact Crimp Tensile Force: Force (Min.) N
20	.5	4.5	3.0	20	89
18	.8	6	2.5	30	133
16	1.2	8	2.5	45	200
14	2.0	10	2.0	50	222
12	3.0	12	1.5	60	267
10	5.0	14	1.5	65	289

Note: This is the total resistance between wire crimps of a mated pin and socket.

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

.140 MATE-N-LOK Connector Calculated Current Table

Number of Circuits	Wire AWG 10	12	14	16	18	20
2	28.00	23.00	18.50	15.00	13.50	10.50
3	25.00	21.00	17.00	13.50	12.00	9.50
9	18.50	15.00	12.00	10.00	9.00	7.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

Minimum Wire Lengths for T-Rise vs. Current Testing

Note: If wire lengths used are less than those listed, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

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.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline (Continued)

Contacts

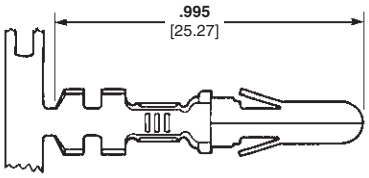
Pin diameter .140 [3.57]
Stock thickness .014 [.357]

Related Product Data

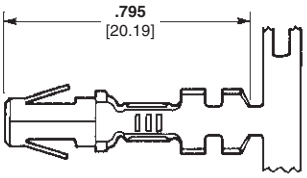
Product Specification
108-1032 .140 Diameter MATE-N-LOK Connectors

Application Specification
114-1007 .140 Diameter MATE-N-LOK Contacts

Performance Characteristics—page 159
Keying Plug—none
Housings—pages 166-167
Technical Documents—pages 165 and 205-206
Application Tooling—pages 207-210



Pin



Socket

Wire Size Range AWG [mm²]	Ins. Dia. Range	Material & Finish	Contact Part Numbers				HDM Applicator Part No.	Hand Tool Part No.
			Pin		Socket			
			Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.100-.180 2.54-4.5	Brass. pre-tin	61627-1	350389-1	61626-1	350388-1	567306-1 567306-2 567306-3	90247-1
		Phos. Brz., pre-tin	61627-2	—	61626-2	—		
14-10 [2.0-5.0]	.100-.180 2.54-4.5	Brass. pre-tin	350201-1	350391-1	350200-1	350390-1	567309-1 567309-2 567309-3	69710-1[2]
		Phos. Brz., pre-tin	350201-2	350391-2	350200-2	350390-2		

[1]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[2]Hand Tool No. **69710-1** uses die set No. **58374-1** for 14-12 AWG and No. **58373-1** for 10 AWG.

Contact Extraction Tool
Part No. 318845-1
IS 408-4378

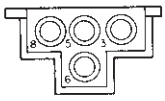
Housings

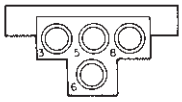
Free-Hanging
.240 [6.09] Centerline spacing

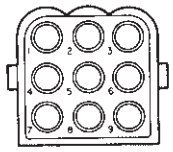
Material
Nylon, natural color

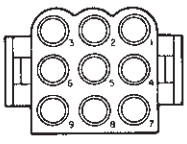
Flammability Rating—UL94V-2

Cavity Identification
(Rear View)

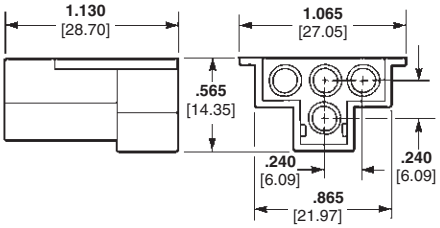

Cap


Plug

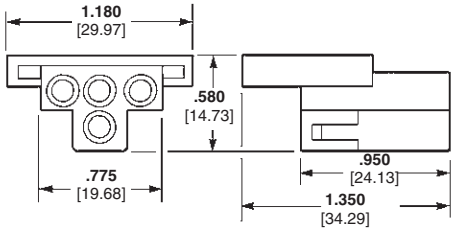

Cap


Plug

4 Circuit

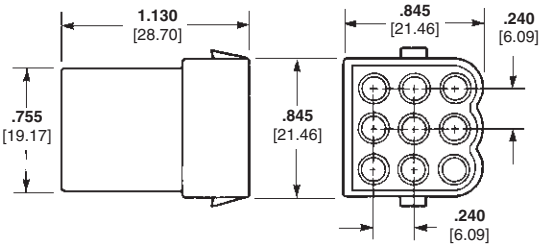


Pin Housing (Cap)
Part No. 1-480512-0
Part No. 794700-1 (Black Color High Temp.)

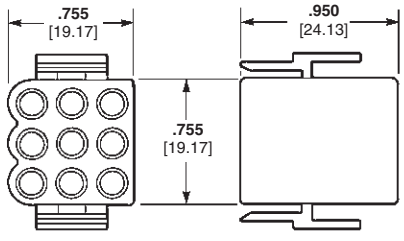


Socket Housing (Plug)
Part No. 1-480510-0

9 Circuit, Matrix



Pin Housing (Cap)
Part No. 1-480586-0



Socket Housing (Plug)
Part No. 1-480585-0

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

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.140 MATE-N-LOK Connectors (Large Insulation), .240 Centerline (Continued)

Housings

Panel Mount

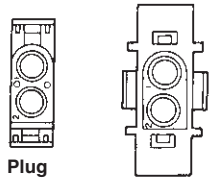
.240 [6.09] Centerline spacing

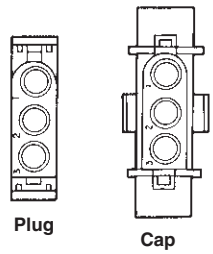
Material

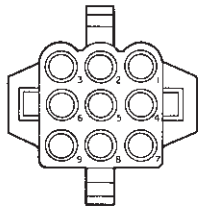
Housing — Nylon, natural color

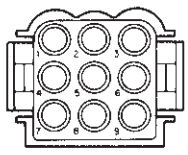
Flammability Rating — UL94V-2

Cavity Identification
(Rear View)









Related Product Data

Product Specification

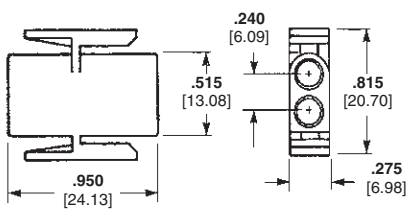
108-1032 .140 Diameter MATE-N-LOK Connectors

Application Specification

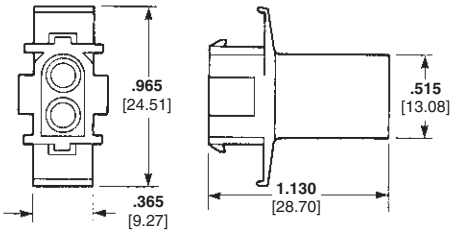
114-1007 .140 Diameter MATE-N-LOK Contacts

Performance Characteristics— page 165
Keying Plug— none
Contacts— page 166
Technical Documents— pages 165 and 205-206

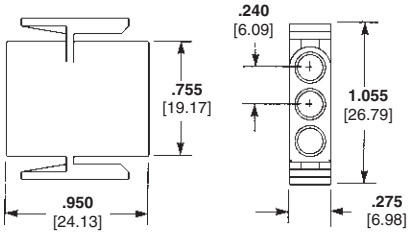
2 and 3 Circuit, In-Line



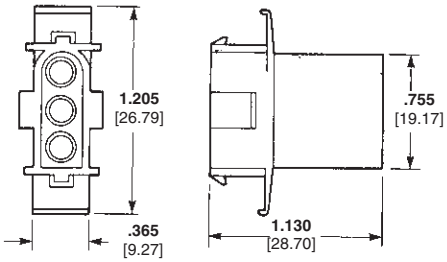
Socket Housing (Plug)
Part No. 1-350344-0
Part No. 794699-1 (Black Color High Temp.)



Pin Housing (Cap)
Part No. 1-350345-0
Part No. 1586305-1 (Black Color High Temp.)

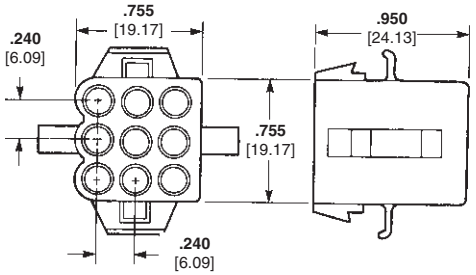


Socket Housing (Plug)
Part No. 1-350346-0

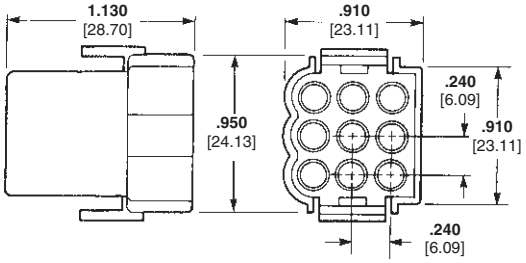


Pin Housing (Cap)
Part No. 1-350347-0
Part No. 794061-1 (Black Color High Temp.)

9 Circuit, Matrix



Socket Housing (Plug)
Part No. 1-480672-0
Part No. 1586305-1 (Black Color High Temp.)

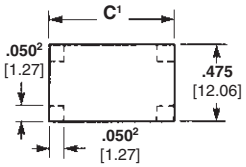


Pin Housing (Cap)
Part No. 1-480673-0
Part No. 794683-1 (Black Color High Temp.)

Recommended Panel Cutouts

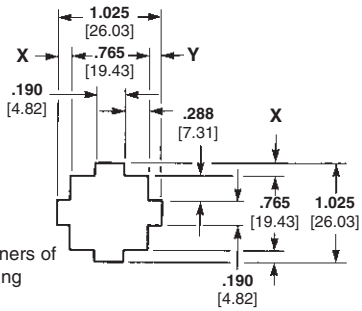
View is from housing entry side

2 and 3 Circuit



¹2 Circuit-.725 [18.42]
3 Circuit- .965 [24.51]
².050 x .050 [1.27-1.27] tabs in corners of outlet are optional to reduce housing float in panel.

9 Circuit



Notes:
1. Panel thickness .040-.070 [1.02-1.78].
2. "X" and "Y" dimensions must be within .005 [.127] of each other.
3. Panel should be punched so that the housing enters the panel in the same direction as the punch for ease of assembly.

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

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Engineering Notes

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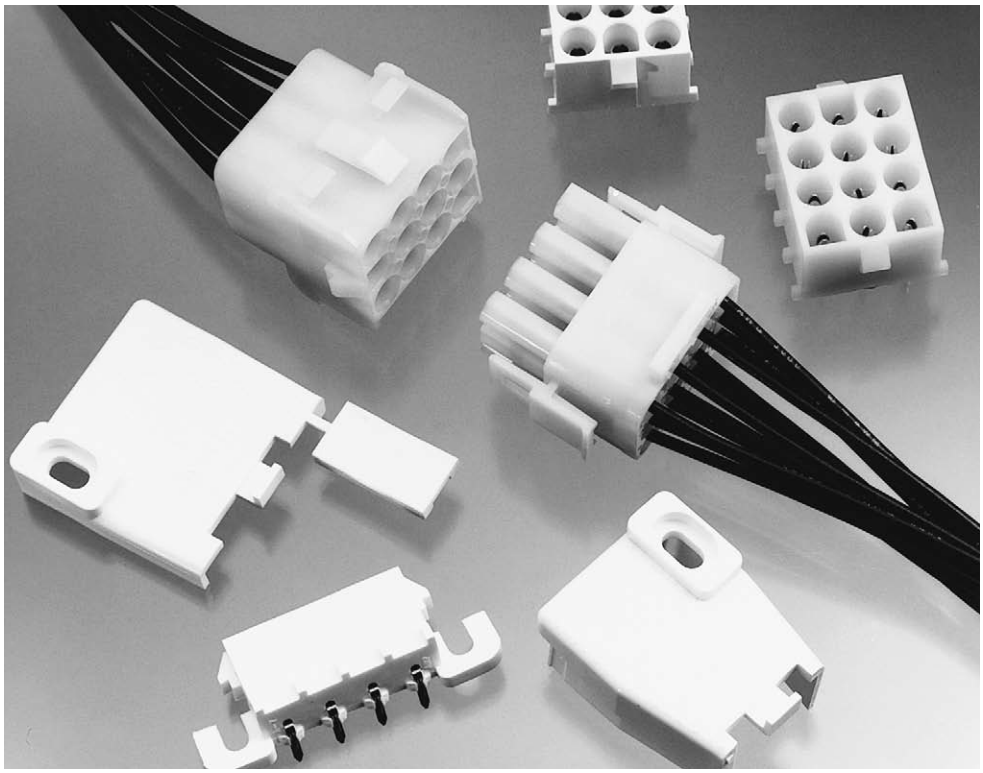
Universal MATE-N-LOK Connectors

Product Facts

- Pins and sockets can be intermixed in the same housing
- Positive polarization
- Rear cavity identification
- Contacts completely enclosed in housings
- Positive locking housings
- Insulation capability to .200 [5.08] diameter
- Removable, crimp snap-in contacts
- Low contact mating force
- Contacts accept 30-10 AWG [.05-5.0 mm^2] wire sizes
- Contacts available with pre-tin or gold plating
- Dual locking lances provide optimum contact stability
- Panel mount or free-hanging
- Mate with Universal MATE-N-LOK II Housings
- Available in UL 94V-O flame retardant material. Meets the material requirements of table 25.1 of U.L. Standard 1410 (television receivers and video products)
- Not for interrupting current
- Harness to PC Board capability using pin or socket headers
- Pin and socket headers are available in both vertical and right-angle style
- Solderability—headers meet MIL-STD 202 Method 208
- Contacts are on .250 [6.35] centerline spacing
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



Performance Characteristics

The Universal MATE-N-LOK Connector performance characteristics found on pages 169-170 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Dielectric Withstanding Voltage—5.0 KVAC or 5.0 KVDC between adjacent circuits

Insulation Resistance—1000 megohms minimum initial between adjacent circuits

Voltage Rating—600 V AC or DC

Contact Insertion Force—5.0 lb. max. per contact

Contact Retention—15 lb. min. per contact

Durability—50 cycles, mating and unmating

Technical Documents

Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK PC Board Headers

Application Specification

114-1010 Universal MATE-N-LOK Contacts

Instruction Sheet

408-7714 Plug, Cap, Headers, Pin, Socket and Accessories

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Universal MATE-N-LOK Connectors (Continued)

Performance Characteristics (Continued)

Maximum Current—Maximum current rating of Universal MATE-N-LOK connectors is limited by the maximum operating temperature of the housings which is 125°C for 94V-2 housings and 120°C for 94V-0 housings including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Printed Wiring Board Conductor Size—The finished trace conductor width and thickness should be maximized to allow for the greatest current carrying capacity and heat dissipation.

Universal MATE-N-LOK connectors also will withstand the following tests:

Vibration—10-55-10 cycles per minute at .06 inch total excursion

Physical Shock—18 drops, 50 G sawtooth at 10 milliseconds

Housing Panel Retention—75 lb. min.

Housing Lock Strength—30 lb. min.

Thermal Shock— -55°C to +85°C

Temperature-Humidity Cycling—25°C to 65°C at 95 RH

Corrosion—48 hr. at 5% salt concentration

Related Product Data

Product Specifications

108-1031 Universal MATE-N-LOK Connectors

108-1053 Universal MATE-N-LOK Headers

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

Calculated Current Table

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 In-Line	15.50	14.50	13.50	11.50	10.00	8.00	6.50	5.00	4.00	2.50
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

Note: If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm²	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	Force (Min.) N
30	.05	—	—	2	9
28	.08	—	—	3	13
26	.12	—	—	6	27
24	.2	1.5	3.50	8	36
22	.3	3	3.50	14	62
20	.5	4.5	3.00	14	62
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

Note: This is the total resistance between wire crimps of a mated pin and socket.

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Universal MATE-N-LOK Connectors (Continued)

Universal MATE-N-LOK Connector Mating Combinations

Connector Part Number[7]					Mating Connector Part Number								
					PC Board Headers[7]								
						Vertical Pin[2]			Vertical Socket[2]			Right-Angle[2]	
Number of Circuits	Flammability Rating	Style	Plug Part Number[2]	Cap Part Number[2]	Plating	Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
1	UL94V-2	—	1-350867-0	770421-1	—	—	—	—	—	—	—	—	—
	UL94V-0	—	350865-1	350866-1	—	—	—	—	—	—	—	—	—
2	UL94V-2	In-Line	1-480698-0 794814-1[3]	1-480699-0 794815-1[3]	Pre-tin	350428-1	641963-1	350582-1	350759-4	643411-1	350986-4	—	—
					Duplex[1]	350428-4	641963-3	350582-4	350759-5	—	—	—	—
	UL94V-0	In-Line	350777-1	350778-1	Pre-tin	350786-1	641964-1 1-641964-1[5]	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
					Duplex[1]	350786-3	641964-3	350787-3	350824-4	643412-3	—	3-350942-0	—
3	UL94V-2	In-Line[6]	1-480700-0 794901-1[3]	1-480701-0 794900-1[3]	Pre-tin	350429-1	641965-1	350583-1	350760-4	643413-1	350987-4	—	—
					Duplex[1]	350429-4	—	350583-4	350760-5	—	—	—	—
	UL94V-0	In-Line	350766-1	350767-1	Pre-tin	350789-1	641966-1 1-641966-1[4]	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
					Duplex[1]	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
4	UL94V-2	In-Line	1-480702-0 794899-1[3]	1-480703-0 794707-1[3]	Pre-tin	350430-1	641967-1	350584-1	350761-4	643415-1	350988-4	1-350948-0	—
					Duplex[1]	350430-4	—	350584-4	350761-5	—	350988-5	—	—
	UL94V-0	In-Line	350779-1	350780-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
					Duplex[1]	350792-3	—	350793-3	350826-4	—	350833-4	3-350944-0	3-643230-0
5	UL94V-2	In-Line	1-480763-0	1-480764-0[3] 794863-1[3]	Pre-tin	640466-1	643405-1	—	640467-1	—	—	1-350949-0	—
					Duplex[1]	640466-3	—	—	640467-3	—	—	—	—
	UL94V-0	In-Line	350809-1	350810-1	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
					Duplex[1]	640900-3	—	—	640901-3	—	—	3-350945-0	3-643232-0
6	UL94V-2	In-Line	640585-1	926307-1	Pre-tin	641832-1	643407-1	—	—	—	—	640587-1	—
					Duplex[1]	641832-3	—	—	—	—	—	—	—
	UL94V-0	In-Line	640581-1	926307-3	Pre-tin	641831-1	643408-1	—	770262-1	—	—	640583-1	643234-1
					Duplex[1]	641831-3	—	—	770262-3	—	—	640583-3	3-643234-0
	UL94V-2	Matrix[6]	1-480704-0 794535-1[3] 794096-1[5]	1-480705-0 794536-1[3]	Pre-tin	350431-1	641969-1	350585-1	350762-4	643423-1	350989-4	—	—
					Duplex[1]	350431-4	—	350585-4	350762-5	—	350989-5	—	—
	UL94V-0	Matrix	350715-1	350781-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
					Duplex[1]	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
8	UL94V-2	In-Line	640586-1	926308-1	Pre-tin	641825-1	—	770143-1	—	—	—	—	—
					Duplex[1]	—	—	—	—	—	—	—	—
	UL94V-0	In-Line	640582-1	926308-3	Pre-tin	641828-1	643410-1	—	—	—	—	640584-1	643236-1
					Duplex[1]	—	643410-3	—	—	—	—	640584-3	3-643236-0
9	UL94V-2	Matrix	1-480706-0 794537-1[3]	1-480707-0 794538-1[3]	Pre-tin	350432-1	641971-1	350586-1	350763-4	643425-1	350990-4	—	—
					Duplex[1]	350432-4	641971-3	350586-4	350763-5	—	350990-5	—	—
	UL94V-0	Matrix	350720-1	350782-1	Pre-tin	350712-1	641972-1 1-641972-1[4]	350742-1	350828-1	643426-1	350835-1	—	—
					Duplex[1]	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
10	UL94V-2	In-Line	926302-1	926309-1	Pre-tin	—	—	—	—	—	—	—	—
					Duplex[1]	—	—	—	—	—	—	—	—
	UL94V-0	In-Line	926302-3	926309-3	Pre-tin	—	—	—	—	—	—	—	—
					Duplex[1]	—	—	—	—	—	—	—	—
12	UL94V-2	Matrix	1-480708-0 794851-1[3]	1-480709-0 794727-1[3]	Pre-tin	350433-1	641973-1	350587-1	350764-4	—	350991-4	—	—
					Duplex[1]	350433-4	—	350587-4	350764-5	—	350991-5	—	—
	UL94V-0	Matrix	350735-1	350783-1	Pre-tin	350713-1	641974-1 1-641974-1[4]	350737-1	350829-1	643428-1	350836-1	—	—
					Duplex[1]	350713-4	641974-3	350737-4	350829-4	—	350836-4	—	—
15	UL94V-2[6]	Matrix	1-480710-0 794546-1[3]	1-480711-0 794545-1[3]	Pre-tin	350434-1	641975-1	350588-1	350765-4	643429-1	350992-4	—	—
					Duplex[1]	350434-4	—	350588-4	350765-5	—	—	—	—
	UL94V-0	Matrix	350736-1	350784-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
					Duplex[1]	350714-4	641976-4	350738-4	350830-4	—	350837-4	—	—

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Universal MATE-N-LOK Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.
[3]Housing material has 125°C temperature rating.
[4]Black in color.
[5]Tool Removable
[6]UV Resistant housing material available.
[7]European glow wire housing material available.

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

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Japan: 81-44-844-8013
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Universal MATE-N-LOK Connectors (Continued)

Contacts

Solid pin diameter .084 [2.13]

Stock thickness .012 [.305] unless otherwise noted.

These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

Related Product Data

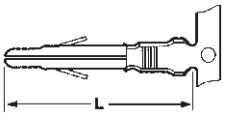
Product Specification

108-1031 Universal MATE-N-LOK Connectors

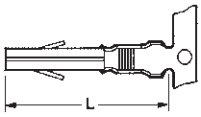
Application Specification

114-1010 Universal MATE-N-LOK Contacts

Performance Characteristics—pages 169-170
Technical Documents—pages 169 and 205-206
Application Tooling—pages 207-210
Housings—page 174



Solid Pin



Socket

Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim. Pin	L Dim. Socket	Material & Finish	Contact Part Numbers Pin Strip Form	Contact Part Numbers Pin Loose Piece	Contact Part Numbers Socket Strip Form	Contact Part Numbers Socket Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
30-26 [.05-.12]	**.032-.057** .813-1.45	**.790** 20.06	**.760** 19.30	Brass, Pre-tin	350924-1	770672-1	350925-1	770673-1	466616-2[6] 466616-3[6]	58439-1
				Phos. Brz., Gold[2]	350924-6	770672-6	350925-6	—		
24-18 [.2-.8]	**.040-.100** 1.02-2.54	**.790** 20.06	**.760** 19.30	Brass, Pre-tin	350561-1	350690-1	350851-1 350570-1[1]	350689-1[1]	466320-1[6] 466320-2[6] 466320-4[6]	91510-1
				Brass, Gold[2]	350561-2	350690-2	350851-2 350570-2[1]	640347-2 350689-2[1]		
				Brass, Select Gold[3]	350561-7	350690-7	350851-7 350570-7[1]	350689-7[1]		
				Phos. Brz., Pre-tin	350561-3	350690-3	350570-3[1]	350689-3[1]		
				Phos. Brz., Select Gold[3]	—	—	350570-6[1]	—		
20-14 [.5-2.0]	**.060-.130** 1.52-3.30	**.790** 20.06	**.760** 19.30	Brass, Pre-tin	350218-1	350547-1	350536-1	350550-1	687763-1[6] 687763-2[6] 687763-6[6]	91500-1
				Brass, Gold[2]	350218-2	350547-2	350536-2	350550-2		
				Brass, Select Gold[3]	350218-7	350547-7	350536-7	350550-7		
				Phos. Brz., Pre-tin	350218-3	350547-3	350536-3	350550-3		
				Phos. Brz., Select Gold[3]	350218-6	350547-6	350536-6	350550-6		
20-14 [.5-2.0] or 2@18 [.8]	**.130-.200** 3.30-5.08	**.810** 20.57	**.780** 19.81	Brass, Pre-tin	350538-1	350552-1	350537-1	350551-1	687926-1[6] 687926-2[6] 687926-6[6]	91508-1[7] 91506-1[7]
				Brass, Gold[2]	350538-2	350552-2	350537-2	350551-2		
				Brass, Select Gold[3]	350538-7	350552-7	350537-7	350551-7		
				Phos. Brz., Pre-tin	350538-3	350552-3	350537-3	350551-3		
				Phos. Brz., Select Gold[3]	350538-6	350552-6	350537-6	350551-6		
18-14[4] [.8-2.0]	**.130-.200** 3.30-5.08	**.810** 20.57	**.780** 19.81	Brass, Pre-tin	350873-1	—	350874-1	—	466588-1[6] 466588-2[6] 466588-3[6]	91508-1[7] 91506-1[7]
				Phos. Brz., Pre-tin	350873-3	350918-3	350874-3	350919-3		
12-10 [3.0-5.0]	**.200 max.**[5] 5.08	**.810** 20.57	**.780** 19.81	Phos. Brz., Pre-tin	350922-3	640309-3	350923-3	640310-3	466597-1[6] 466597-2[6] 466597-3[6]	69710-1[7]
				Phos. Brz., Select Gold[3]	350922-6	640309-6	350923-6	640310-6		

[1]Socket Contact — .010 [.254] stock thickness
[2]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[3]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[4]Recommended for predominant use of 14 AWG wire.
[5]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.
[6]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[7]Hand Tool No. **91508-1** is for wire size 20-18 AWG. Hand Tool No. **91506-1** is for wire size 16-14 AWG. Hand Tool No. **69710-1** use die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.

Note: Phosphor bronze material contacts should be used in high temperature/humidity cycling applications.
Note: All part numbers are RoHS Compliant.

Contact Retention Test Tool
Part No. 1586701-1
IS 408-10003

Contact Extraction Tool
Part No. 318851-1
IS 408-4371

Contact Insertion Tool
(For inserting contacts applied to small diameter wire)
Part No. 91002-1
IS 408-7347

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Universal MATE-N-LOK Connectors (Continued)

Contacts

Split pin diameter .086 [2.18]

Stock thickness .012 [.305]

These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.

Related Product Data

Product Specification

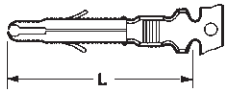
108-1031 Universal MATE-N-LOK Connectors

Application Specification

114-1010 Universal MATE-N-LOK Contacts

Performance Characteristics— pages 169-170
Technical Documents— pages 169 and 205-206
Application Tooling— pages 207-210
Housings—page 174

Split Pins



Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	**.040-.100** 1.02-2.54	**.790** 20.06	Brass, Pre-tin	350699-1	350706-1	466320-1[3] 466320-2[3] 466320-4[3]	91510-1
			Brass, Gold[1]	350699-2	350706-2		
			Brass, Select Gold[2]	350699-7	350706-7		
20-14 [.5-2.0]	**.060-.130** 1.52-3.30	**.790** 20.06	Brass, Pre-tin	350687-1	350705-1	687763-1[3] 687763-2[3] 687763-6[3]	91500-1
			Brass, Gold[1]	350687-2	350705-2		
			Brass, Select Gold[2]	350687-7	350705-7		
20-14 [.5-2.0] or 2@18 [.8]	**.130-.200** 3.30-5.08	**.810** 20.57	Brass, Pre-tin	350700-1	350707-1	687926-1[3] 687926-2[3] 687926-6[3]	91508-1[4] 91506-1[4]
			Brass, Gold[1]	350700-2	350707-2		
			Brass, Select Gold[2]	350700-7	350707-7		

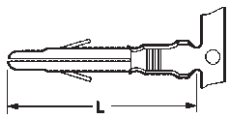
[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.
[4]Hand Tool No. **91508-1** for wire size 20-18 AWG. Hand Tool No. **91506-1** for wire size 16-14 AWG.

Notes:
1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.

Grounding Pins

(.100 [2.54] longer than standard pin)

(Mate first, break last, not for interrupting current)



Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Number		HDM Applicator Part No.	Hand Tool Part No.
				Strip Form	Loose Piece		
24-18 [.2-.8]	**.060-.130** 1.52-3.30	**.890** 22.60	Brass, Pre-tin	770210-1	—	567216-2[2] 567216-3[2]	—
20-14 [.5-2.0]	**.060-.130** 1.52-3.30	**.890** 22.60	Brass, Pre-tin	350654-1	350669-1	687763-1[2] 687763-2[2] 687763-6[2]	91500-1
12-10 [3.0-5.0]	**.200 max.**[1] 5.08	**.910** 23.11	Phos. Brz., Pre-tin	770234-3	—	466597-1[2] 466597-2[2] 466597-3[2]	—

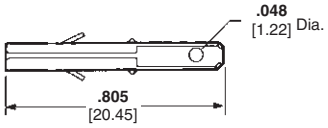
[1]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing.
[2]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -3 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Programmable Connector Contact

(Socket with 110 Series Special FASTON Tab)

Material and Finish

Brass, pre-tin



Part Number
350877-1

Note: This contact will accept a 110 Series FASTON Receptacle — Part No. **350871-1** (strip form) allowing simple field wiring or wiring changes.

Note: All part numbers are RoHS Compliant.

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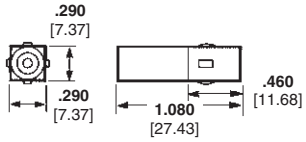
Universal MATE-N-LOK Connectors (Continued)

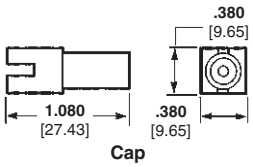
Housings

Free-Hanging or Panel Mount

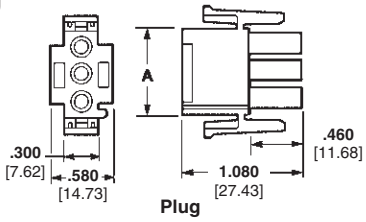
.250 [6.35] Centerline spacing

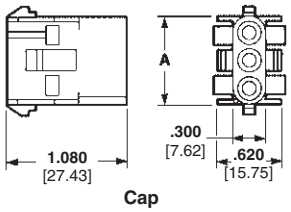
1 Circuit, Free-Hanging



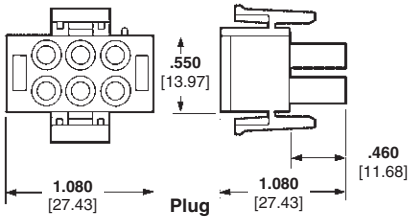


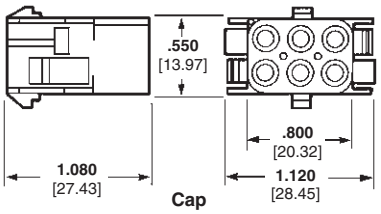
2, 3, 4, 5, 6, 8 and 10 Circuit, In-Line



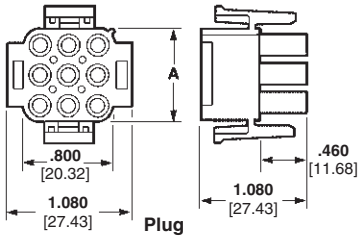


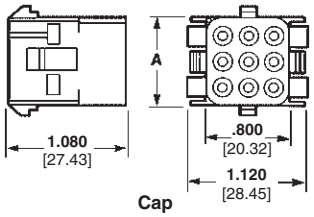
6 Circuit, Matrix





9, 12 and 15 Circuit, Matrix





Related Product Data

Product Specification

108-1031 Universal MATE-N-LOK Connectors

Performance Characteristics—pages 169-170
Contacts—pages 172-173
Panel Cutout Recommendations—page 175
Keying Plug—page 175
Strain Reliefs—pages 175-176
Technical Documents—pages 169 and 205-206
Mating Headers—pages 182-183 and 185
Other Mating Connectors
Universal MATE-N-LOK II Housings—pages 193-194

Note: See charts on page 182 to order Plug and Cap Housings in **colors**.

Number of Circuits	A Dim.	Housing Part Numbers			
		UL94V-2 Nylon, Natural Color[2]		UL94V-0 Nylon[3]	
		Plug	Cap	Plug	Cap
1	—	1-350867-0	770421-1	350865-1	350866-1
2	**.550** 13.97	1-480698-0[1]	1-480699-0[1]	350777-1[1]	350778-1[1]
3	**.800** 20.32	1-480700-0[1]	1-480701-0[1]	350766-1[1]	350767-1[1]
4	**1.050** 26.67	1-480702-0[1]	1-480703-0[1]	350779-1[1]	350780-1[1]
5	**1.300** 33.02	1-480763-0[1]	1-480764-0[1]	350809-1[1]	350810-1[1]
6	**1.550** 39.37	640585-1[1]	926307-1[1]	640581-1[1]	926307-3[1]
	—	1-480704-0 794096-1[4]	1-480705-0	350715-1	350781-1
8	**2.050** 52.07	640586-1[1]	926308-1[1]	640582-1[1]	926308-3[1]
9	**.800** 20.32	1-480706-0	1-480707-0	350720-1	350782-1
10	**2.550** 64.77	926302-1[1]	926309-1[1]	926302-3[1]	926309-3[1]
12	**1.050** 26.67	1-480708-0	1-480709-0	350735-1	350783-1
15	**1.300** 33.02	1-480710-0	1-480711-0	350736-1	350784-1

[1]In-Line style.
[2]Housing material has 125°C temperature rating.
[3]Housing material has 120°C temperature rating.
[4]Tool Removable.

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

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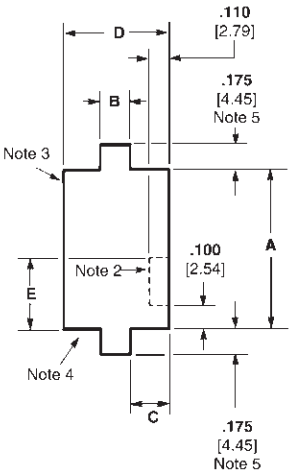
Universal MATE-N-LOK Connectors (Continued)

Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification 114-1010

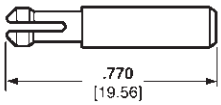


Style	Number of Circuits	Dimensions A	B	C	D	E
In-Line	2	**.565** 14.35	**.340** 8.64	**.095** 2.41	**.530** 13.46	**.250** 6.35
	3	**.815** 20.70	**.340** 8.64	**.095** 2.41	**.530** 13.46	**.250** 6.35
	4	**1.065** 27.05	**.340** 8.64	**.095** 2.41	**.530** 13.46	**.250** 6.35
	5	**1.315** 33.40	**.340** 8.64	**.095** 2.41	**.530** 13.46	**.250** 6.35
	6	**1.567** 39.80	**.154** 3.91	**.189** 4.80	**.531** 13.49	**.394** 10.0
	8	**2.067** 52.50	**.154** 3.91	**.189** 4.80	**.531** 13.49	**.394** 10.0
	10	**2.567** 65.20	**.154** 3.91	**.189** 4.80	**.530** 13.46	**.394** 10.0
Matrix	6	**.565** 14.35	**.480** 12.19	**.275** 6.99	**1.030** 26.16	**.250** 6.35
	9	**.815** 20.70	**.480** 12.19	**.275** 6.99	**1.030** 26.16	**.250** 6.35
	12	**1.065** 27.05	**.480** 12.19	**.275** 6.99	**1.030** 26.16	**.350** 8.89
	15	**1.315** 33.40	**.480** 12.19	**.275** 6.99	**1.030** 26.16	**.350** 8.89

Notes:
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit Matrix housings.
4. Circuit #1 location when using panel keying with 2, 3, 4, 5, 6, 8 and 10 circuit In-Line housings.
5. .175 [4.45] dimension is .125 [3.18] for 6, 8 and 10 circuit In-Line housings.

Keying Plugs

IS 408-3320

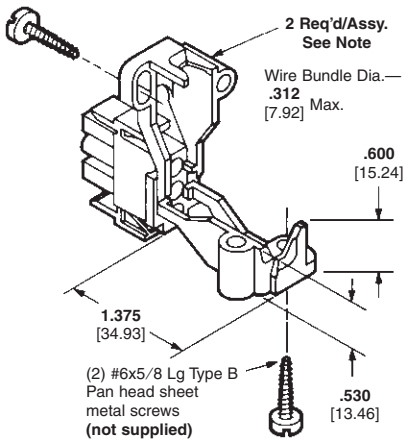


Part Numbers
UL94V-2 Nylon material, natural color — **1-640415-1**
UL94V-0 Nylon material — **1-640415-0**
Note: Keying plug snaps into plug or cap housing

Plug Housing Strain Reliefs

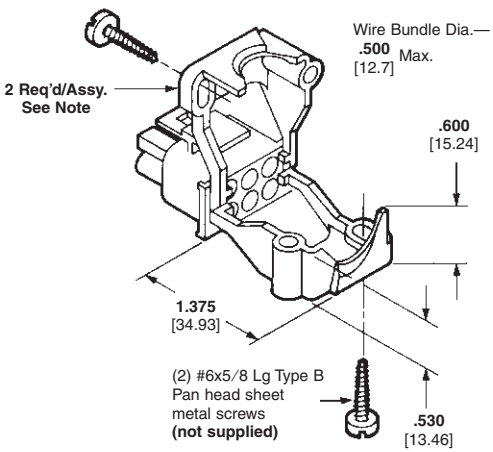
IS 408-3320

2, 3, 4, 5, 6 and 8 Circuit, In-Line



Part Numbers
UL94V-2 Nylon material, natural color — **1-350589-0**
UL94V-0 Nylon material — **350811-1**

6, 9, 12 and 15 Circuit, Matrix



Part Numbers
UL94V-2 Nylon material, natural color — **1-350590-0**
UL94V-0 Nylon material — **350812-1**

Note: Strain relief part number represents one half of a strain relief. Two strain reliefs required per housing.

Note: All part numbers are RoHS Compliant.

Related Product Data

Plug Housings— page 174
Technical Documents— pages 169 and 205-206

Catalog 82181
Revised 4-08

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Universal MATE-N-LOK Connectors (Continued)

Plug or Cap Housing Strain Reliefs

IS 408-3320

Related Product Data

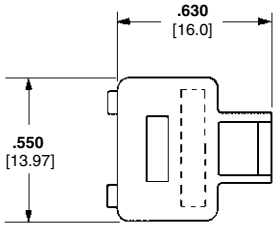
Housings— page 174
Technical Documents— pages 169 and 205-206

Cap Housing Adapters

These adapters are designed to anchor the cap housing strain reliefs to the housings and prevent the strain relief halves from "drawing in" when the screws are being torqued down to clamp the cable.

IS 408-3320

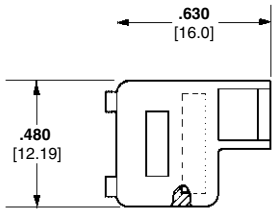
For All Positions Except 2, 6 and 8 Circuit Cap Housings



UL94V-2 Nylon material, natural color— **641777-1**

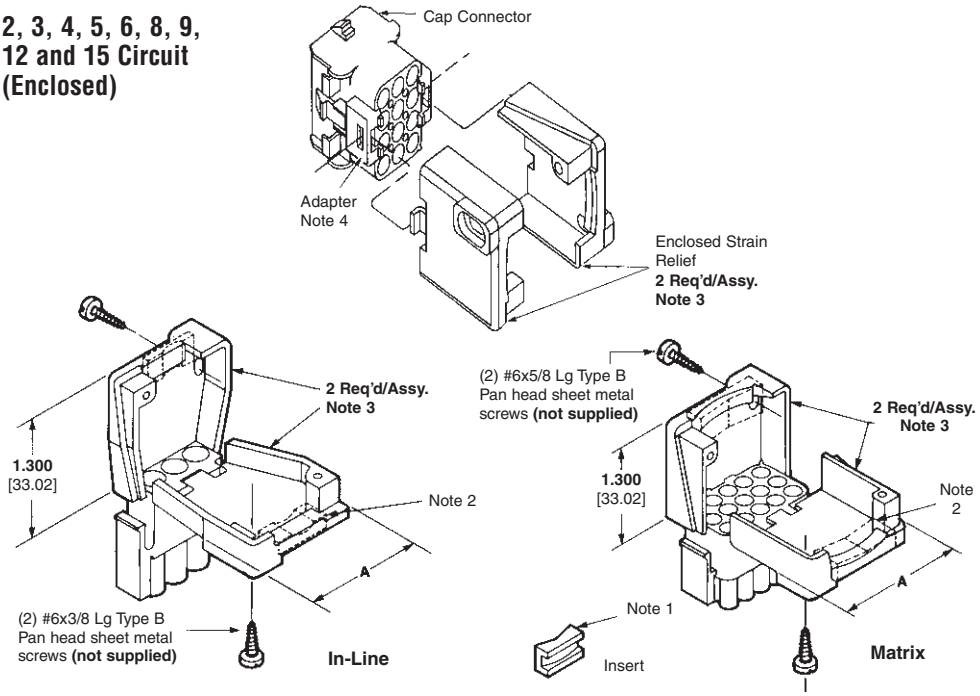
UL94V-0 Nylon material— **641778-1**

For 2 In-Line and 6 Matrix Circuit Cap Housings Only



UL94V-2 Nylon material, natural color— **643182-1**
UL94V-0 Nylon material— **643182-2**

2, 3, 4, 5, 6, 8, 9, 12 and 15 Circuit (Enclosed)



Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Part Numbers	
						UL94V-2 Nylon, Natural Color	UL94V-0 Nylon
In-Line	2	**.960** 24.38	Yes	**.040-.190** 1.02-4.83	—	1-640719-0	640713-1
			No	—	**.200-.350** 5.08-8.89	1-640719-1	640713-2
	3	**1.140** 28.96	Yes	**.040-.190** 1.02-4.83	—	1-640720-0	640714-1
			No	—	**.200-.350** 5.08-8.89	641763-1	641945-1
	4	**1.325** 33.65	Yes	**.040-.190** 1.02-4.83	—	641775-1	641776-1
			No	—	**.200-.350** 5.08-8.89	641775-2	641776-2
	5	**1.530** 38.86	Yes	**.040-.190** 1.02-4.83	—	643030-3	643030-1
			No	—	**.200-.350** 5.08-8.89	643030-2	643030-4
	6 Note 5	**1.780** 45.21	Yes	**.040-.190** 1.02-4.83	—	643585-1	643313-1
			No	—	**.200-.350** 5.08-8.89	643585-2	643313-2
	8 Note 5	**2.280** 56.08	Yes	**.040-.190** 1.02-4.83	—	—	643314-1
			No	—	**.200-.350** 5.08-8.89	—	643314-2
Matrix	6	**1.030** 26.16	Yes	—	**.120-.650** 3.05-16.51	1-640721-0	640715-1
	9	**1.030** 26.16	Yes	—	**.120-.650** 3.05-16.51	1-640722-0	640716-1
	12	**1.280** 32.51	Yes	—	**.150-.750** 3.81-19.05	1-640723-0	640717-1
	15	**1.530** 38.86	Yes	—	**.200-.850** 5.08-21.59	1-640724-0	640718-1

Notes:
1. Cable clamping insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. **Strain relief part number represents one-half of a strain relief. Two strain reliefs required per housing.**
4. Must use cap housing adapters when attaching strain reliefs to a cap housing. **Two adapters required per housing.**
5. Strain reliefs for 6 and 8 circuit In-Line fits plug housings only.

Note: All part numbers are RoHS Compliant.

Catalog 82181
Revised 4-08

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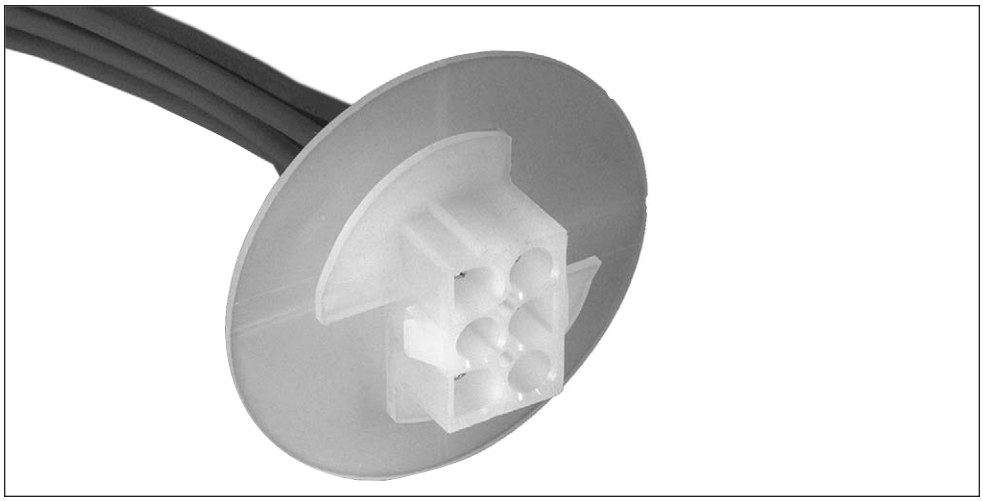
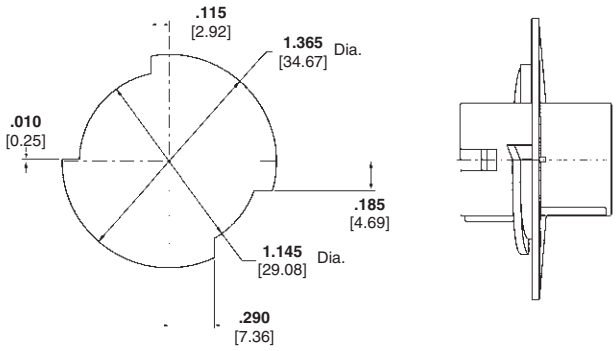
Universal MATE-N-LOK Flanged Cap Housings with Twist and Lock Feature

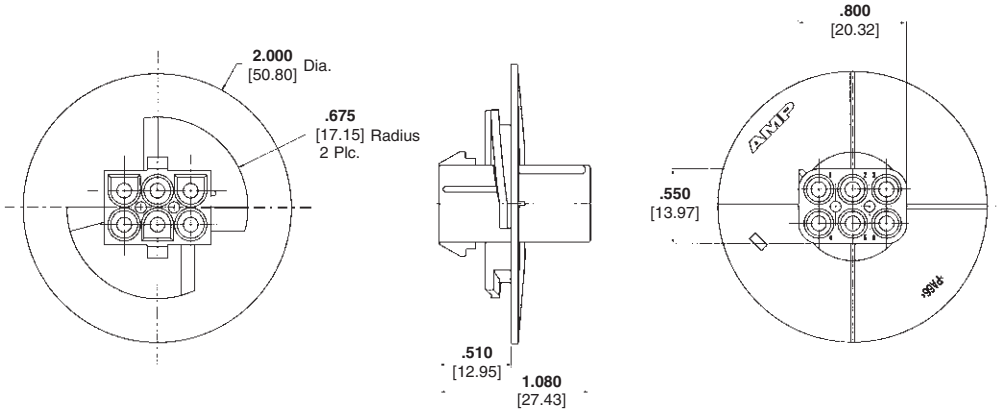
Product Facts

- **Available in a 6, 9, and 12 circuit design**
- **Designed for household appliances where a bulkhead connector system is needed in conjunction with foam-in insulation**
- **Mates with standard Universal MATE-N-LOK plug housings (page 174)**
- **Accepts Universal MATE-N-LOK pin and socket contacts (page 167)**
- **Designed to utilize the Splash Proof/Sealed Universal MATE-N-LOK seals for additional sealing protection (pages 174-175)**





Recommended Panel Cutout (for 6 and 9 Pos. Housings)



Material and Finish

Housing—Nylon, UL 94V-0 or UL 94V-2 rated
Contacts—Phosphor Bronze or Brass
Plating—Pre-tin or Gold

Related Product Data

Contacts—pages 172-173
Plug Housings—page 174
Seals—page 180

Notes:
1. Recommended Panel Thickness: 0.76-2.29 [.030-.090]
2. Panel must be punched so that the housing enters the panel in the same direction as the punch.
3. Asymmetrical panel cutout provides polarization for Pin 1 location.

Number of Circuits	Cap Housing Part Numbers	
	UL 94V-0	UL 94V-2
6	794760-1	794714-1
9	794761-1	794715-1
12	794762-1	794716-1

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

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Japan: 81-44-844-8013
UK: 44-8706-080-208

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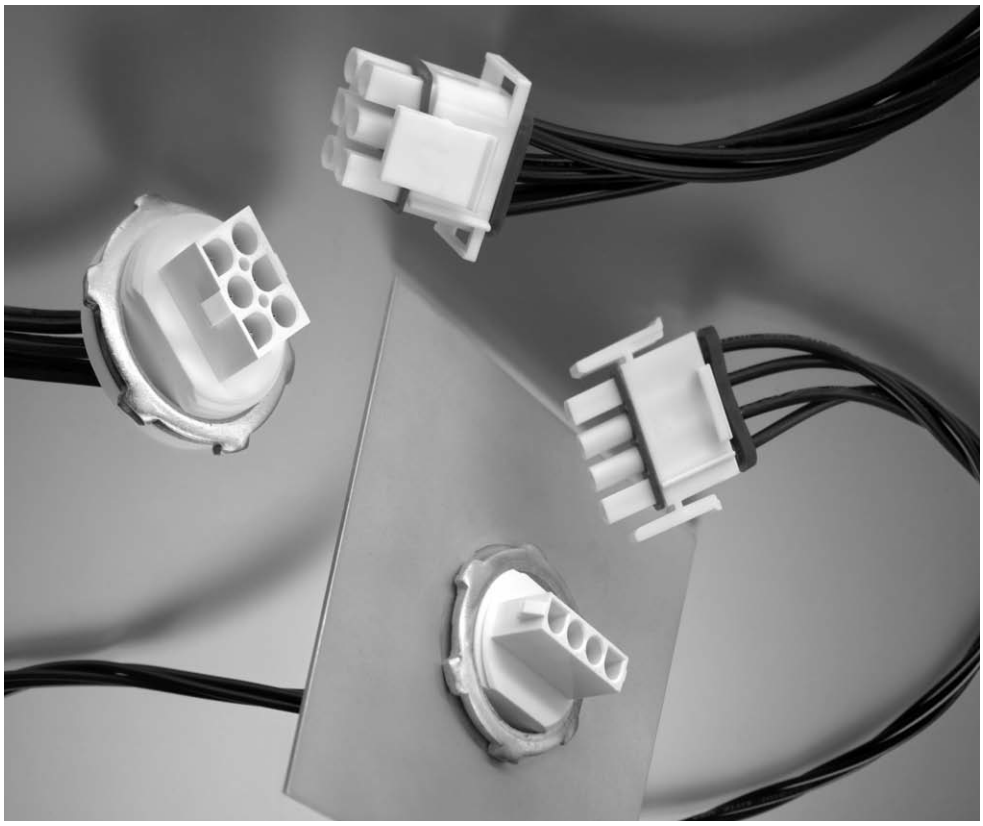
Universal MATE-N-LOK Sealed Bulkhead Connectors

Product Facts

- **Bulkhead mount Universal MATE-N-LOK connector that facilitates sealed panel mounting and works with existing Universal MATE-N-LOK seals to provide a fully-sealed interconnection system**
- **Available in 4, 6, 9 and 12 positions**
- **Sealed, flange mount design**
- **Mates to standard Universal MATE-N-LOK plug housings**
- **Accepts standard Universal MATE-N-LOK contacts**
- **Works with standard Universal MATE-N-LOK connector interface and wire seals**
- **Anti-rotation feature aids installation**
- **Rear mount flange design enables use in wire harnesses**
- **Pins and sockets can be intermixed in the same housing**
- **UL Recognized, File No. E28476**
- **CSA Certified, File No. 1030930**

Applications

- **Vending Machines**
- **Industrial Machinery**
- **Lighting**
- **HVAC Equipment**



Performance Characteristics

Dielectric Withstanding Voltage—5.0 KVAC or 5.0 KVDC between adjacent circuits

Insulation Resistance—1000 megohms minimum initial between adjacent circuits

Voltage Rating—600 V AC or DC

Durability—50 cycles, mating and unmating

Technical Documents

Product Specification
108-1031 Universal MATE-N-LOK Connectors

Application Specification
114-1010 Universal MATE-N-LOK Contacts

Instruction Sheet
408-10017 Universal MATE-N-LOK Bulkhead Connectors

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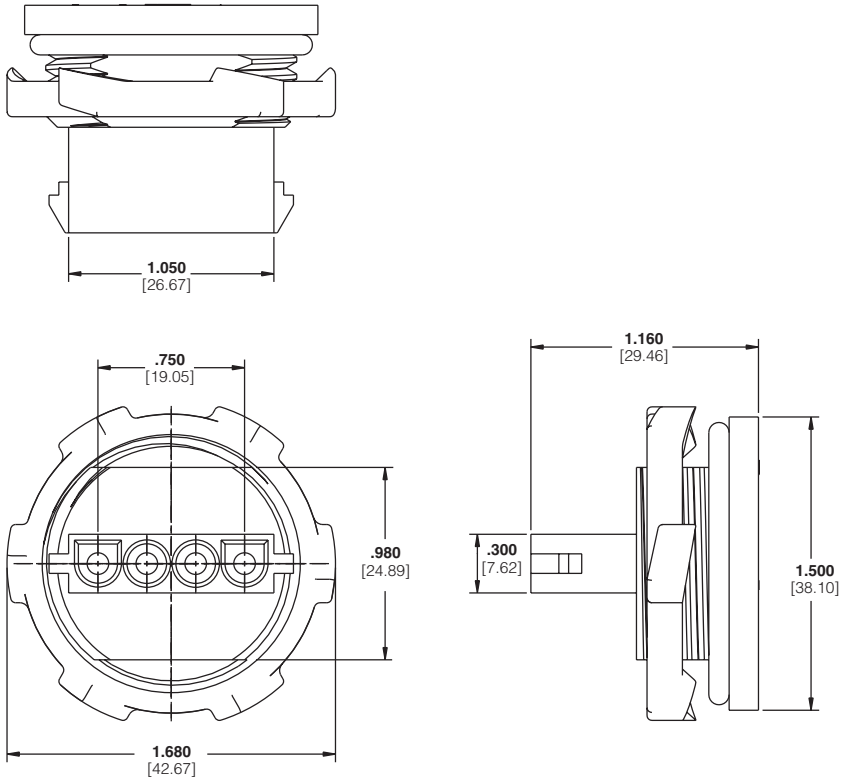
Universal MATE-N-LOK Sealed Bulkhead Connectors (Continued)

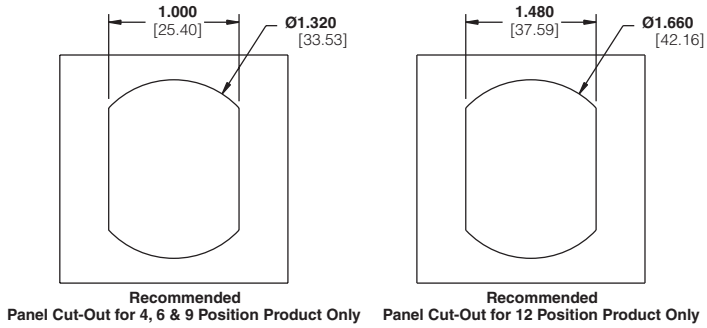
Connector Housings

4 Position Connector Housing (shown)

Material and Finish

Housing—Nylon, UL 94V-0 rated
Contacts—Brass with pre-tin or gold plating
O-ring Seal—Neoprene
Locking Nut—Steel, zinc plated





Recommended Panel Cut-Out for 4, 6 & 9 Position Product Only

Recommended Panel Cut-Out for 12 Position Product Only

No. of Pos.	Style	Housing Part Number
4	In Line	1604256-1
6	Matrix	1604210-1
9	Matrix	1604254-1
12	Matrix	1604941-1

Note: All part numbers are RoHS Compliant.

Catalog 82181
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Universal MATE-N-LOK Sealed Connectors

Splash Proof Seals

Product Facts

- Economical splash proof/ immersible sealed connector system
- No design changes to existing Universal MATE-N-LOK product
- Existing applications utilizing Universal MATE-N-LOK connectors can be upgraded to a splash proof system
- Utilizes two wire seals and one interface seal
- Wire range is 20-14 AWG [.5-2.0] with insulation diameter range .060-.130 [1.52-3.30]
- .110-.130 [2.79-3.30] insulation diameter passed European IP sealing level 5/6 + 7 (swirling dust/ immersion to 1 meter for 30 minutes)
- .060-.110 [1.52-2.79] insulation diameter passed European IP sealing level 5/5 + 7 (swirling dust/ heavy seas)
- Universal MATE-N-LOK II keying plug can be used to seal unused circuits
- Primary application is for wire-to-wire; wire-to-board application must use a closed bottom header

Material

Silicone rubber, blue color

Technical Documents

Product Specification

108-1031-1 Splash Proof Seal, Universal MATE-N-LOK Connectors

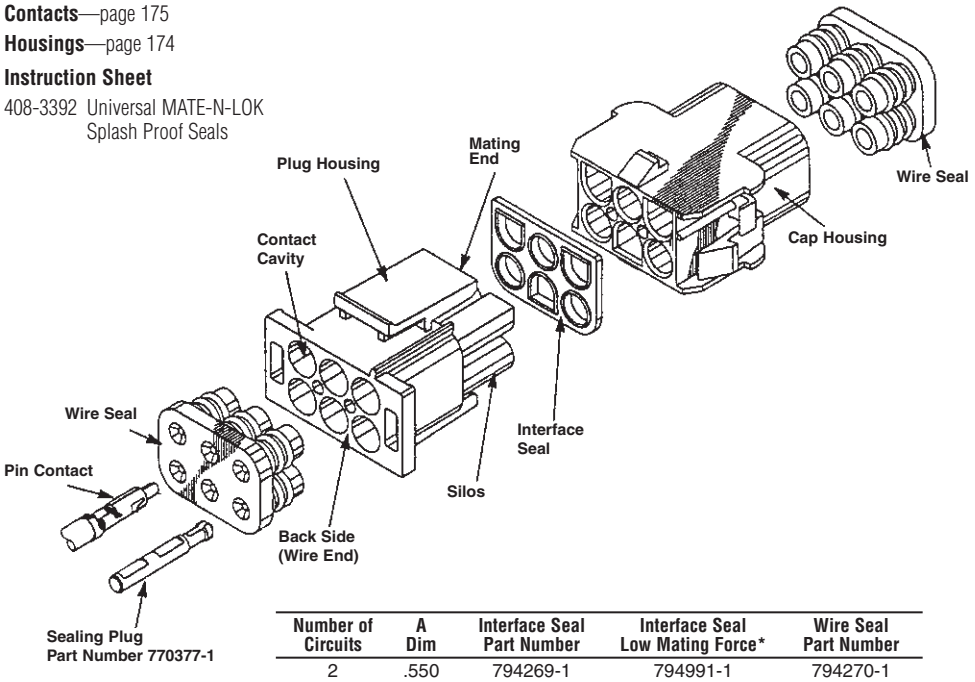
Contacts—page 175

Housings—page 174

Instruction Sheet

408-3392 Universal MATE-N-LOK Splash Proof Seals

Note: For proper use of this product, customer should make sure that Instruction Sheet 408-3392 is available for review.

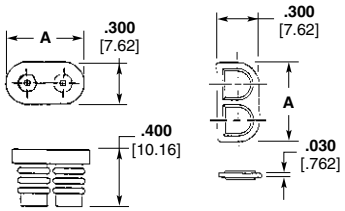


Number of Circuits	A Dim	Interface Seal Part Number	Interface Seal Low Mating Force*	Wire Seal Part Number
2	.550	794269-1	794991-1	794270-1
3	.800	794271-1	794992-1	794272-1
4	1.050	794273-1	—	794274-1
6	—	794275-1	794993-1	794276-1
9	.800	794277-1	794994-1	794278-1
12	1.050	794279-1	—	794280-1
15	1.300	794281-1	—	794282-1

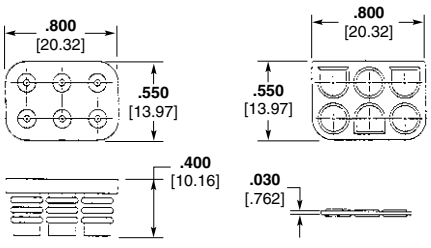
Note: One interface seal and two wire seals required per mated assembly.
*Low mating force interface seals do not meet IP 5/6 IP 5/7 requirements.

Note: All part numbers are RoHS Compliant.

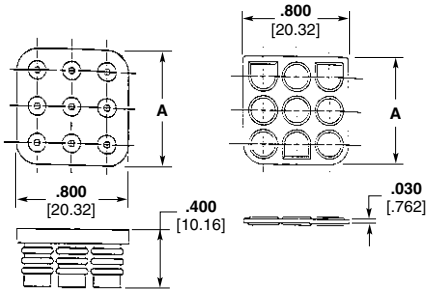
2, 3, 4 Circuit, In-Line



6 Circuit, Matrix



9, 12, and 15 Circuit, Matrix



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Universal MATE-N-LOK Sealed Connectors (Continued)

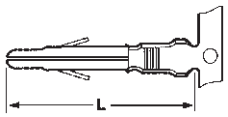
Contacts (used with Splash Proof Seals)

Solid pin diameter .084 [2.13]

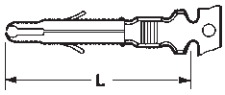
Split pin diameter .086 [2.18]

Stock thickness .012 [.305] unless otherwise noted.

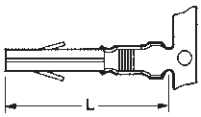
These contacts can be used in either Universal MATE-N-LOK Plug or Cap housings **only**.



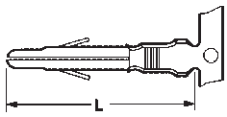
Solid Pin



Split Pin



Socket



Grounding Pin
(100 [2.54] longer than standard pin)
(Mate first, break last, not for interrupting current)

Related Product Data

Product Specification
108-1031 Universal MATE-N-LOK Connectors

Application Specification
114-1010 Universal MATE-N-LOK Contacts

Performance Characteristics—pages 169-170
Technical Documents—pages 169 and 205-206
Application Tooling—pages 207-210
Housings—page 174

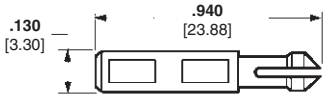
Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim. Pin	L Dim. Socket	Material & Finish	Style	Contact Part Numbers Pin Strip Form	Contact Part Numbers Pin Loose Piece	Contact Part Numbers Socket Strip Form	Contact Part Numbers Socket Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
20-14 [.5-2.0]	.060-.130 1.52-3.30	.790 20.06	.760 19.30	Brass, Pre-tin	Solid	350218-1	350547-1	350536-1	350550-1	687763-1[3] 687763-2[3] 687763-6[3]	91500-1
				Brass, Gold[1]		350218-2	350547-2	350536-2	350550-2		
				Brass, Select Gold[2]		350218-7	350547-7	350536-7	350550-7		
				Phos. Brz., Pre-tin		350218-3	350547-3	350536-3	350550-3		
				Phos. Brz., Select Gold[2]		350218-6	350547-6	350536-6	350550-6		
				Brass, Pre-tin	Split	350687-1	350705-1	—	—		
				Brass, Gold[1]		350687-2	350705-2	—	—		
				Brass, Select Gold[2]		350687-7	350705-7	—	—		
		.890 22.60	—	Brass, Pre-Tin	Grounding	350654-1	350669-1				

[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Select Gold Finish — Plated with .000030 [.000762] min. gold in mating area over .000050 [.00127] min. nickel underplate on entire contact.
[3]HDM Applicator part number ending in -1, is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 & -6 are used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Notes:
1. Split pins recommended for use in housings having 6, 9, 12 and 15 circuits to reduce mating force.
2. Phosphor bronze material contacts are available for use in high temperature/humidity cycling applications, consult Tyco Electronics.
3. 18-24 AWG contacts (page 166) can be used with splash proof seals if insulation diameter range is .060-.100 [1.52-2.54].

Universal MATE-N-LOK II Keying Plug/Splash Proof Sealing Plug

IS 408-3392



Part Number
UL94V-0 Nylon material — **770377-1**

Related Product Data

Housings—page 174
Technical Documents—pages 169 and 205-206

Seal Latch Tool
Part No. 794381-1
IS 408-3392

Contact Extraction Tool
Part No. 318851-1
IS 408-4371

Contact Insertion Tool (For inserting contacts applied to small diameter wire)
Part No. 91002-1
IS 408-7347

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

Catalog 82181
Revised 4-08

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Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

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Universal MATE-N-LOK Connectors

PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

Material

Housing —
UL94V-2 Nylon, natural color
UL94V-0 Nylon

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

Related Product Data

Product Specification

108-1053 Universal MATE-N-LOK PC Board Headers

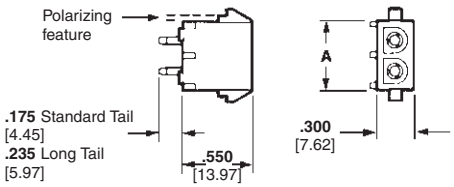
Performance Characteristics— pages 169-170
Recommended PC Board Hole Layout— page 184
Technical Documents— pages 169 and 205-206

Mating Connectors

Universal MATE-N-LOK
Plug Housings — page 174

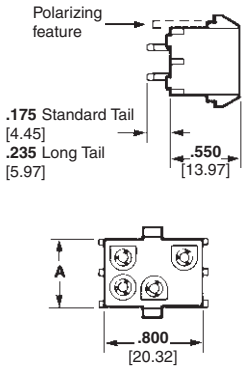
Universal MATE-N-LOK II
Plug Housings — pages 193-194

2, 3, 4, 5, 6 and 8 Circuit, In-Line



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers: Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.550 13.97	UL94V-2	Pre-tin	350428-1	641963-1	350582-1	1-480698-0	—
			Duplex[1]	350428-4	641963-3	350582-4		
		UL94V-0	Pre-tin	350786-1	641964-1 / 1-641964-1[4]	350787-1	350777-1	770017-1
			Duplex[1]	350786-3	641964-3	350787-3		
3	.800 20.32	UL94V-2	Pre-tin	350429-1	641965-1	350583-1	1-480700-0	—
			Duplex[1]	350429-4	—	350583-4		
		UL94V-0	Pre-tin	350789-1	641966-1 / 1-641966-1[4]	350790-1	350766-1	770018-1
			Duplex[1]	350789-3	—	350790-3		
4	1.050 26.67	UL94V-2	Pre-tin	350430-1	641967-1	350584-1	1-480702-0	—
			Pre-tin	770351-1[5]	—	—		
			Duplex[1]	350430-4	—	350584-4		
		UL94V-0	Pre-tin	350792-1	641968-1	350793-1	350779-1	770019-1
			Duplex[1]	350792-3	—	350793-3		
5	1.300 33.02	UL94V-2	Pre-tin	640466-1	643405-1	—	1-480763-0	—
			Duplex[1]	640466-3	—	—		
		UL94V-0	Pre-tin	640900-1	643406-1	—	350809-1	770016-1
			Duplex[1]	640900-3	—	—		
6	1.550 39.37	UL94V-2	Pre-tin	641832-1	643407-1	—	640585-1	—
		UL94V-0	Pre-tin	641831-1	643408-1	—	640581-1	—
8	2.050 52.07	UL94V-2	Pre-tin	641825-1	—	770143-1	640586-1	—
		UL94V-0	Pre-tin	641828-1	643410-1	770272-1	640582-1	—
		UL94V-0	Duplex[1]	—	643410-3	770272-3	—	—

6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Flammability Rating	Pin Finish	Pin Header Part Numbers: Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK	Universal MATE-N-LOK II
6	.550 13.97	UL94V-2	Pre-tin	350431-1	641969-1	350585-1	1-480704-0	—
					—	643749-1[5]		
			Duplex[1]	350431-4	—	350585-4		
		UL94V-0	Pre-tin	350711-1	641970-1 / 1-641970-1[4]	350732-1	350715-1	770020-1
			Duplex[1]	350711-4	641970-3	350732-4		
9	.800 20.32	UL94V-2	Pre-tin	350432-1	641971-1	350586-1	1-480706-0	—
			Duplex[1]	350432-4	641971-3	350586-4		
		UL94V-0	Pre-tin	350712-1	641972-1 / 1-641972-1[4]	350742-1	350720-1	770021-1
			Duplex[1]	350712-4	641972-3	350742-4		
12	1.050 26.67	UL94V-2	Pre-tin	350433-1	641973-1	350587-1	1-480708-0	—
			Duplex[1]	350433-4	—	350587-4		
		UL94V-0	Pre-tin	350713-1	641974-1 / 1-641974-1[4]	350737-1	350735-1	770022-1
			Duplex[1]	350713-4	641974-3	350737-4		
15	1.300 33.02	UL94V-2	Pre-tin	350434-1	641975-1	350588-1	1-480710-0	—
			Duplex[1]	350434-4	—	350588-4		
		UL94V-0	Pre-tin	350714-1	641976-1	350738-1	350736-1	770023-1
			Duplex[1]	350714-4	641976-4	350738-4		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board. [3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color. [5]No drain holes, used w/ seals, page 180. **Note: All part numbers are RoHS Compliant.**

Note: Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

Catalog 82181
Revised 4-08

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Japan: 81-44-844-8013
UK: 44-8706-080-208

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Universal MATE-N-LOK Connectors (Continued)

PC Board Vertical Socket Headers

.250 [6.35] Centerline spacing

Material

Housing —
UL94V-2 Nylon, natural color
UL94V-0 Nylon

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

Related Product Data

Product Specification

108-1053 Universal MATE-N-LOK PC Board Headers

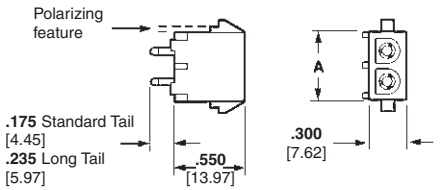
Performance Characteristics— pages 169-170
Recommended PC Board Hole Layout— page 184
Technical Documents— pages 169 and 205-206

Mating Connectors

Universal MATE-N-LOK
Plug Housings — page 174

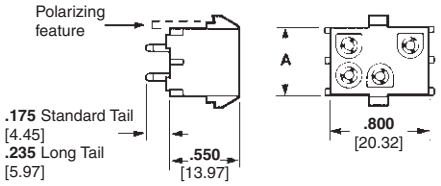
Universal MATE-N-LOK II
Plug Housings — pages 193-194

2, 3, 4, 5, and 6 Circuit, In-Line



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Universal MATE-N-LOK	Universal MATE-N-LOK II
2	.550 13.97	UL94V-2	Pre-tin	350759-4	643411-1	350986-4	1-480698-0	—
			Duplex[1]	350759-5	—	—		
		UL94V-0	Pre-tin	350824-1	643412-1	350831-1	350777-1	770017-1
			Duplex[1]	350824-4	643412-3	—		
3	.800 20.32	UL94V-2	Pre-tin	350760-4	643413-1	350987-4	1-480700-0	—
			Duplex[1]	350760-5	—	—		
		UL94V-0	Pre-tin	350825-1	643414-1	350832-1	350766-1	770018-1
			Duplex[1]	350825-4	643414-3	350832-4		
4	1.050 26.67	UL94V-2	Pre-tin	350761-4	643415-1	350988-4	1-480702-0	—
			Duplex[1]	350761-5	—	350988-5		
		UL94V-0	Pre-tin	350826-1	643416-1	350833-1	350779-1	770019-1
			Duplex[1]	350826-4	—	350833-4		
5	1.300 33.02	UL94V-2	Pre-tin	640467-1	—	—	1-480763-0	—
			Pre-tin	640467-3	—	—		
		UL94V-0	Pre-tin	640901-1	—	—	350809-1	770016-1
			Duplex[1]	640901-3	—	—		
6	1.550 39. 37	UL94V-0	Duplex[1]	770262-3	—	—	640581-1	—

6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Flammability Rating	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
				Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Universal MATE-N-LOK	Universal MATE-N-LOK II
6	.550 13.97	UL94V-2	Pre-tin	350762-4	643423-1	350989-4	1-480704-0	—
			Duplex[1]	350762-5	—	350989-5		
		UL94V-0	Pre-tin	350827-1	643424-1	350834-1	350715-1	770020-1
			Duplex[1]	350827-4	643424-3	350834-4		
9	.800 20.32	UL94V-2	Pre-tin	350763-4	643425-1	350990-4	1-480706-0	—
			Duplex[1]	350763-5	—	350990-5		
		UL94V-0	Pre-tin	350828-1	643426-1	350835-1	350720-1	770021-1
			Duplex[1]	350828-4	643426-3	350835-4		
12	1.050 26.67	UL94V-2	Pre-tin	350764-4	—	350991-4	1-480708-0	—
			Duplex[1]	350764-5	—	350991-5		
		UL94V-0	Pre-tin	350829-1	643428-1	350836-1	350735-1	770022-1
			Duplex[1]	350829-4	—	350836-4		
15	1.300 33.02	UL94V-2	Pre-tin	350765-4	643429-1	350992-4	1-480710-0	—
			Duplex[1]	350765-5	—	—		
		UL94V-0	Pre-tin	350830-1	643430-1	350837-1	350736-1	770023-1
			Duplex[1]	350830-4	—	350837-4		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

Note: All part numbers are RoHS Compliant.

Note: Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

Catalog 82181
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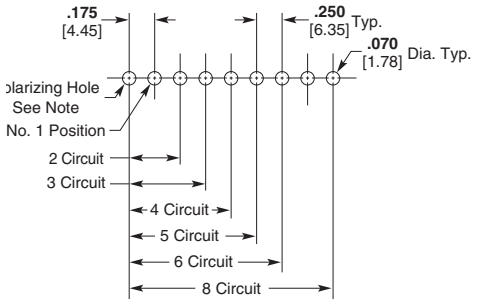
Universal MATE-N-LOK Connectors (Continued)

Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

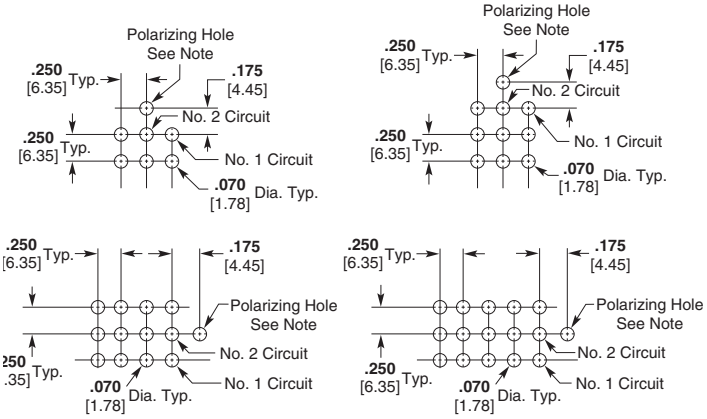
Related Product Data

Vertical Headers—pages 182-183

2, 3, 4, 5, 6 and 8 Circuit, In-Line



6, 9, 12 and 15 Circuit, Matrix



Note: Polarizing hole **.070** [1.78] Dia. required for polarized headers only.

PC Board Vertical Pin Headers with ACTION PIN Contacts

Material and Finish

Housing — PBT, black

Flammability Rating — UL94V-0

Contacts — Copper alloy, plated with tin over nickel on entire contact

Related Product Data

Performance Characteristics—pages 169-170

Technical Documents — pages 169 and 205-206

Product Specification

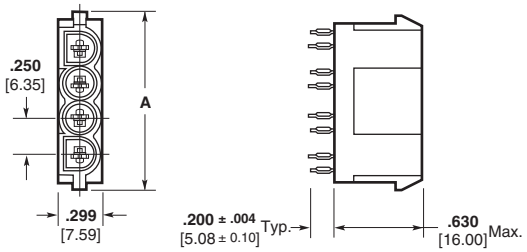
108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

Mating Connectors

Universal MATE-N-LOK
Plug Housings — page 174

Universal MATE-N-LOK II
Plug Housings — pages 193-194

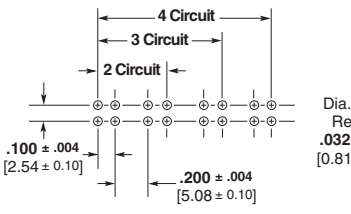
Note: Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.



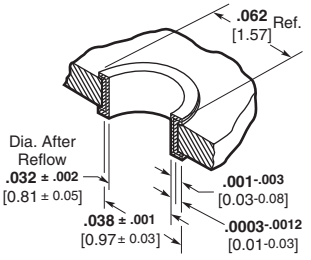
Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK	Universal MATE-N-LOK II
2	**.750** 19.05	173924-1	1-480698-0 350777-1	770017-1
3	**1.000** 25.40	173925-1	1-480700-0 350766-1	770018-1
4	**1.250** 31.75	173926-1	1-480702-0 350779-1	770019-1

Note: Install in PC Board with arbor tool.

Note: All part numbers are RoHS Compliant.



Recommended PC Board Hole Layout



PC Board Hole Dimensions

Catalog 82181
Revised 4-08

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Japan: 81-44-844-8013
UK: 44-8706-080-208

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Universal MATE-N-LOK Connectors (Continued)

PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

Material

Housing — Nylon

Contacts — Phosphor bronze

Solder tail width .052 [1.32]

Related Product Data

Product Specification

108-1053 Universal MATE-N-LOK PC Board Headers

Performance Characteristics— pages 169-170

Technical Documents— pages 169 and 205-206

Mating Connectors

Universal MATE-N-LOK

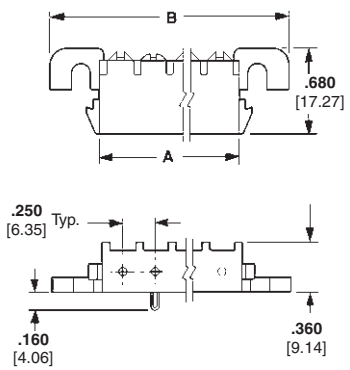
Plug Housings — page 174

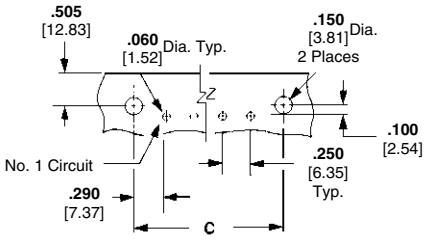
Universal MATE-N-LOK II

Plug Housings — pages 193-194

Note: Header Housings on pages 182-185 are available in **colors** listed on page 188. Call Technical Support for exact Part Numbers.

2, 3, 4, 5, 6 and 8 Circuit, In-line





Use 6-32 UNC Pan Head Screw
3/8 [9.53] long for mounting
(Not Supplied)

Recommended PC Board Hole Layout
.062 [1.57] Board Thickness

No. of Circuits	Dimensions A	B	C	Contact Finish	Right-Angle Header Part Numbers UL94V-2 Pin	Socket	Mates with	UL94V-0 Pin	Socket	Mates with: Universal MATE-N-LOK	Mates with: Universal MATE-N-LOK II
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	—	—	—	1-350942-0	643226-1	350777-1	770017-1
								770994-1[2]	—		
				Duplex[1]	—	—	—	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	—	—	—	1-350943-0	643228-1	350766-1	770018-1
				Duplex[1]	—	—		3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350948-0	—	1-480702-0	1-350944-0	643230-1	350779-1	770019-1
				Duplex[1]	—	—		3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350949-0	—	1-480763-0	1-350945-0	643232-1	350809-1	770016-1
				Duplex[1]	—	—		3-350945-0	3-643232-0		
6	1.550 39.37	2.245 57.02	1.830 46.48	Pre-tin	640587-1	643235-1	640585-1	640583-1	643234-1	640581-1	—
				Duplex[1]	—			640583-3	3-643234-0		
8	2.050 52.07	2.745 69.72	2.330 59.18	Pre-tin	—	643237-1	640586-1	640584-1	643236-1	640582-1	—
				Duplex[1]	—			640584-3	3-643236-0		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact. [2]Black in color.

Test Connectors (with spring loaded contacts)

Material

Housing — Nylon

Flammability Rating — UL94V-0

Related Product Data

Mating Connectors — Housings and headers having the same number of circuits. The housings can have pin or socket contacts, or a combination of both.

Mating Housings — page 174

Mating Headers — pages 182-185

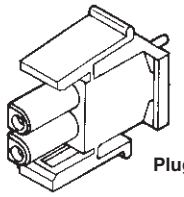
Other Mating Connectors

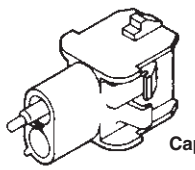
Universal MATE-N-LOK II Housings— pages 193-194

Notes:

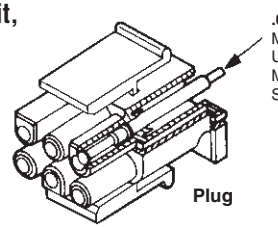
1. Test probes have 5 amp maximum current rating. 1,000,000 cycles.
2. Test Connector housings are of the same configuration as standard housings. Refer to page 23 for dimensional specifications.

2, 3, 4 and 5 Circuit, In-Line

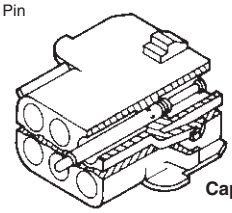

Plug


Cap

6, 9, 12 and 15 Circuit, Matrix



Plug


Cap

Number of Circuits	Part Numbers: Plug	Cap
2	350848-2	350849-2
3	350848-3	350849-3
4	350848-4	350849-4
5	350848-5	350849-5
6	350848-6	350849-6
9	350848-9	350849-9
12	1-350848-2	1-350849-2
15	1-350848-5	1-350849-5

Note: All part numbers are RoHS Compliant.

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South America: 55-11-2103-6000
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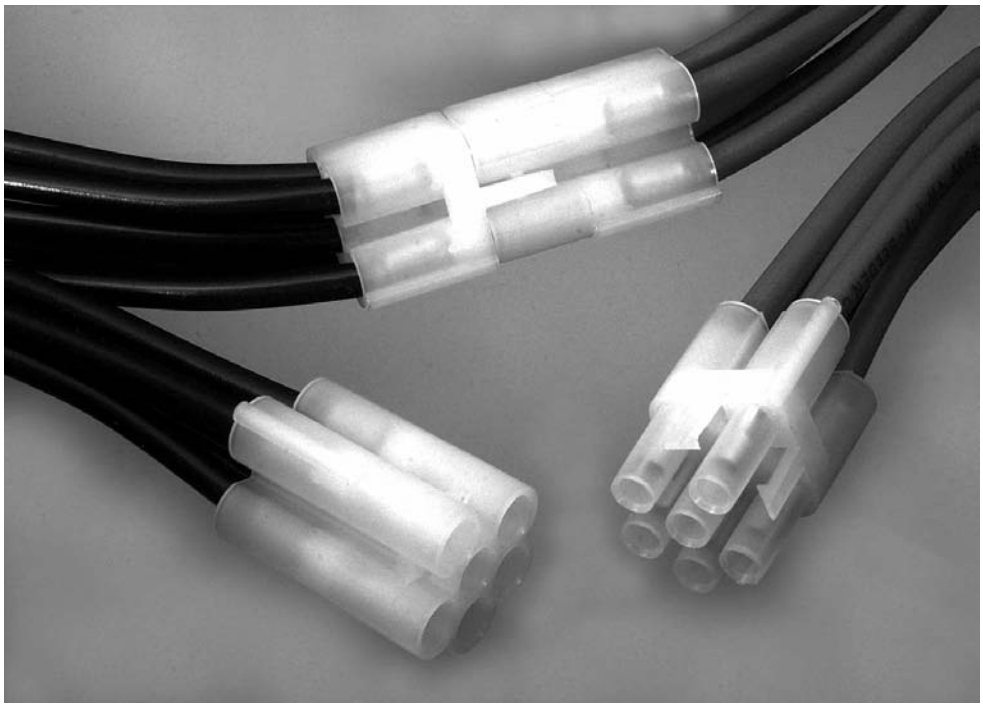
Universal MATE-N-LOK Circular Connectors



Product Facts

- Unique product designed to accommodate the specific needs of the lighting industry
- Circular design allows the connector to pass through 7/8 inch knock-out holes in electrical fixtures and boxes
- 6-position accommodates most major electrical industry requirements
- Universal MATE-N-LOK connector centerline spacing maintains UL and CSA approvals
- Uses standard Universal MATE-N-LOK contacts and application tooling
- Positive polarized housing helps prevent incorrect mating
- UL Recognized, File No. E28476
- CSA Certified, File No. LR7189

Applications

- Primary applications are in the Lighting, Vending, and Appliance industries
- Applications where use of a completed harness that will pass through a 7/8 inch knock-out is required
- Provides the capability to quickly disconnect individual fixtures from sensitive environmental areas and perform maintenance at other sites
- Not for interrupting current

Performance Characteristics

Voltage—600 V AC or DC

Current—20 amps maximum per UL-1977 (6 position, fully energized)

Dielectric Withstanding Voltage—5 KVAC or KVDC

Insulation Resistance—1000 MΩ max. between adjacent circuits

Durability—50 cycles mating and unmating

Contact Retention—15 lb. minimum per contact

Technical Documents

Product Specification
108-2069 Universal MATE-N-LOK Circular Connector

Application Specification
114-1010 Universal MATE-N-LOK Connectors

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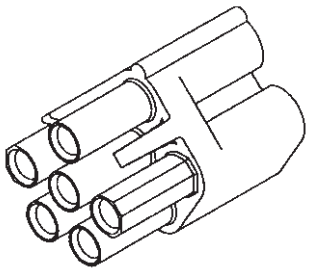
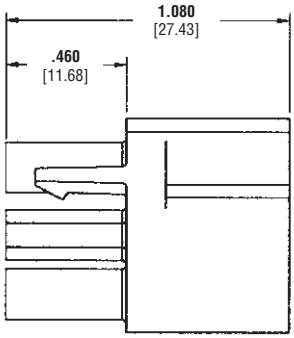
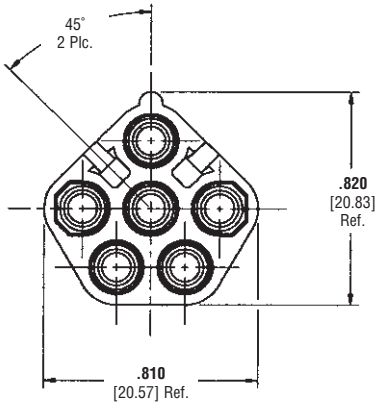
Universal MATE-N-LOK Circular Connectors (Continued)

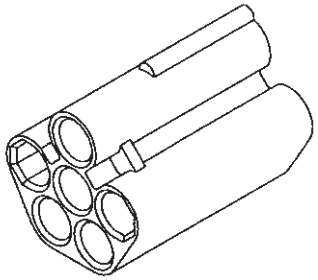
Plug
Part No. 794911-1

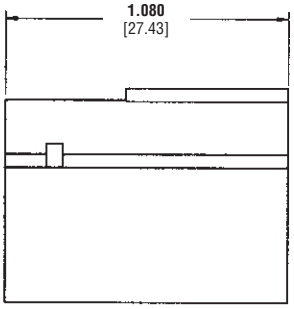


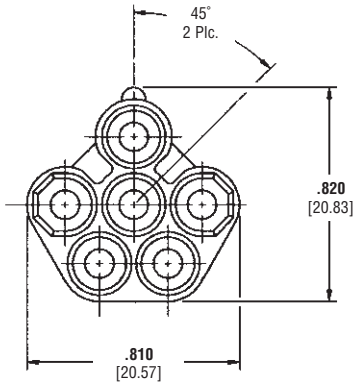




Cap
Part No. 794912-1







Material and Finish
Housings—Nylon, UL 94V-2 rated

Related Product Data
Contacts—pages 172-173

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

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Universal MATE-N-LOK Connectors — Available in Colors

Note: See corresponding Universal MATE-N-LOK Plug and Cap Housing Base Part Numbers on page 175.

Header Housings on pages 182-185 are also available in **colors**. Call Technical Support for exact Part Numbers.

Base Part Number	No. of Circuits	Housing	Material
480698	2	Plug	V-2
480699	2	Cap	V-2
480700	3	Plug	V-2
480701	3	Cap	V-2
480702	4	Plug	V-2
480703	4	Cap	V-2
480763*	5	Plug*	V-2
480764*	5	Cap*	V-2
480704	6	Plug	V-2
480705	6	Cap	V-2
480706	9	Plug	V-2
480707	9	Cap	V-2
480708	12	Plug	V-2
480709	12	Cap	V-2
480710	15	Plug	V-2
480711	15	Cap	V-2
350777	2	Plug	V-0
350778	2	Cap	V-0
350766	3	Plug	V-0
350767	3	Cap	V-0
350799	4	Plug	V-0
350780	4	Cap	V-0
350809	5	Plug	V-0
350810	5	Cap	V-0
350715	6	Plug	V-0
350781	6	Cap	V-0
350720	9	Plug	V-0
350782	9	Cap	V-0
350735	12	Plug	V-0
350783	12	Cap	V-0
350736	15	Plug	V-0
350784	15	Cap	V-0

Dash Number	Color
1-xxxxxx-0	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

*** Special for Base Part Numbers 480763 and 480764**

Dash Number	Color
xxxxxx-1	Natural
1-xxxxxx-1	Brown
1-xxxxxx-2	Red
1-xxxxxx-3	Orange
1-xxxxxx-4	Yellow
1-xxxxxx-5	Green
1-xxxxxx-6	Blue
1-xxxxxx-8	Gray
1-xxxxxx-9	Black

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UK: 44-8706-080-208

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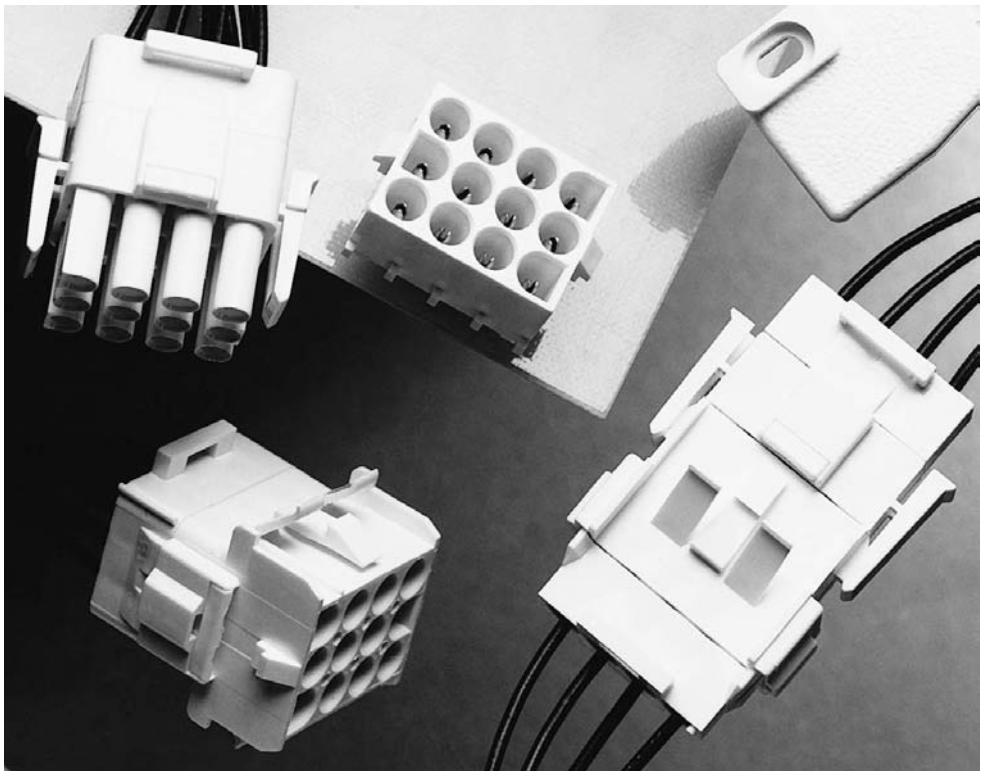
Universal MATE-N-LOK II Connectors

Product Facts

- High reliability
- For use where repair or replacement would be difficult
- Pins and sockets can be intermixed in the same housing
- Available in 2 through 15 circuit sizes for free-hanging or panel mount wire-to-wire connection
- Mate with standard Universal MATE-N-LOK Housings and PC Board Headers
- Uses standard Universal MATE-N-LOK panel cutouts and strain reliefs
- Polarized housings available in UL94V-0 flammability rated material
- Enclosed contacts for shock protection
- F-Crimp terminals accept 30-10 AWG [.05-5.0 mm²] wire sizes
- Contacts available in strip and loose form
- Lanceless contacts for tangle-free handling
- Insulation capability to .200 [5.08] diameter
- Connector design provides for complete contact insertion
- Three-point stabilization precisely controls contact alignment, minimizing stubbing
- Tin or duplex gold plated contacts
- Contacts are on .250 [6.35] centerline spacing
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association, File No. LR 7189
- Passed test by VDE under their Registration Number 3980/Continuous Surveillance



Performance Characteristics

The Universal MATE-N-LOK II Connector performance characteristics found on pages 189-190 are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Dielectric Withstanding Voltage—5.0 KV AC or DC between adjacent circuits initially

Insulation Resistance—1000 megohms minimum between adjacent circuits

Voltage Rating—600 V AC or DC

Connector Mating—Split Pin—1.5 lb. max. per circuit

Connector Unmating—Split Pin—.5 lb. min. per circuit

Contact Insertion Force—3.0 lb. max. per contact unassembled

Contact Retention—35 lb. min. per contact

Durability—50 cycles, mating and unmating

Technical Documents

Product Specification

108-1090 Universal MATE-N-LOK II Connectors

Application Specification

114-1043 Universal MATE-N-LOK II Connectors

Instruction Sheet

408-3200 Housing, Contacts and Accessories

Catalog 82181
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Universal MATE-N-LOK II Connectors (Continued)

Performance Characteristics (Continued)

Maximum Current—Maximum current rating of Universal MATE-N-LOK II connectors is limited by the maximum operating temperature of the housings which is 120°C including the temperature rise of the contacts which is a maximum of 30°C. There are several variables which have a direct effect on this maximum current-carrying capability for a given connector and must be considered for each application. These variables are:

Wire Size—Larger diameter wire will carry more current since it has less internal resistance to current flow and thus generates less heat. Longer wire lengths also enhance current carrying capabilities since the wire conducts heat away from the connector.

Connector Size—In general, the more circuits in a connector, the less current can be carried.

Ambient Temperature—The higher the ambient temperature, the less current can be carried in any given connector.

Universal MATE-N-LOK II connectors also will withstand the following tests:

Vibration—10-55-10 cycles per minute at .06 inch total excursion

Physical Shock—18 drops, 50 g sawtooth at 10 milliseconds

Housing Panel Retention—75 lb. min.

Housing Lock Strength—35 lb. min.

Thermal Shock— -55°C to +85°C

Temperature-Humidity Cycling—25°C to 65°C at 95 RH

Corrosion—48 hr. at 5% salt concentration

Related Product Data

Product Specification

108-1090 Universal MATE-N-LOK II Connectors

Current Rating Verification for 30°C Maximum Temperature Rise 100% Energized

Wire-to-Wire

Calculated Current Table

Number of Circuits	Wire Gauge									
	10	12	14	16	18	20	22	24	26	30
2	19.00	18.00	17.00	14.50	13.00	10.00	8.00	6.50	5.50	3.50
3	17.50	16.50	15.50	13.00	12.00	9.00	7.50	6.00	5.00	3.00
4	16.50	15.50	15.00	12.50	11.00	8.50	7.00	5.50	4.50	3.00
5	16.00	15.00	14.00	12.00	10.50	8.00	6.50	5.50	4.50	3.00
6 Matrix	15.00	14.00	13.00	11.00	9.50	7.50	6.00	5.00	4.00	2.50
8	14.50	14.00	13.00	10.50	9.50	7.50	6.00	5.00	4.00	2.50
9	13.50	12.50	11.50	9.50	8.50	6.50	5.50	4.50	3.50	2.00
10	14.00	13.00	12.50	10.00	9.00	7.00	5.50	4.50	3.50	2.50
12	12.50	12.00	11.00	9.00	8.00	6.00	5.00	4.00	3.00	2.00
15	12.00	11.50	10.00	8.50	7.50	6.00	4.50	4.00	3.00	2.00

Values are based on initial Temperature Rise versus Current Testing and are intended to be a guide in the selection of a connector family. All applications should be tested by the end user. The values listed are per circuit for fully loaded housings being 100% energized. **Note:** All combinations were not tested, and this chart contains interpolated and extrapolated values.

Minimum Wire Lengths for T-Rise vs. Current Testing

AWG	Min. Length (in.)	AWG	Min. Length (in.)
30	2.6	18	9.4
28	3.2	16	11.3
26	4.1	14	13.7
24	5.1	12	16.4
20	7.8	10	19.3

Note: If wire lengths used are less than those listed above, the current carrying ability of the system will be reduced due to less heat being conducted away from the connector. The customer should fully test all applications.

Wire-to-Board

Due to the vast differences in trace geometry and printed circuit board configurations, we are unable to provide a separate current carrying chart for our printed circuit board header products. However, the above Wire-to-Wire charts may be used as a guideline for headers if the trace width and thickness is equal to the listed wire gauge. For vertical headers, only 95% of the Wire-to-Wire value should be used. For right-angle headers, only 75% of the Wire-to-Wire value should be used. The chart values are only a tool for connector selection and will require the customer to fully test their application.

Termination Resistance/Contact Crimp Tensile Force

Wire Size		Termination Resistance		Contact Crimp Tensile Force	
AWG	mm²	Test Current (Amps)	Resistance Milliohms (Max. Init.)	Force (Min.) lbs.	Force (Min.) N
30	.05	—	—	1.5	7
28	.08	—	—	3	13
26	.12	—	—	5	22
24	.2	1.5	3.50	7	31
22	.3	3	3.50	12	53
20	.5	4.5	3.00	17	66
18	.8	6	3.00	30	133
16	1.2	8	2.75	45	200
14	2.0	10	2.75	50	222
12	3.0	—	—	60	267
10	5.0	—	—	70	311

Note: This is the total resistance between wire crimps of a mated pin and socket.

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Universal MATE-N-LOK II Connectors (Continued)

Universal MATE-N-LOK II Connector Mating Combinations

Connector Part Number				Mating Connector Part Number									
						PC Board Headers							
						Vertical Pin[2]			Vertical Socket[2]			Right-Angle[2]	
Number of Circuits	Flammability Rating	Style	Plug Kit Part Number[2]	Cap Kit Part Number[2]	Plating	Standard Tail	Standard Tail Polarized	Long Tail	Standard Tail	Standard Tail Polarized	Long Tail	Pin	Socket
2	UL94V-0	In-Line	770017-1	770024-1	Pre-tin	350786-1	641964-1	350787-1	350824-1	643412-1	350831-1	1-350942-0	643226-1
					Duplex[1]	350786-3	641964-3	350787-3	350824-4	643412-3	—	3-350942-0	—
3	UL94V-0	In-Line	770018-1	770025-1	Pre-tin	350789-1	641966-1	350790-1	350825-1	643414-1	350832-1	1-350943-0	643228-1
					Duplex[1]	350789-3	—	350790-3	350825-4	643414-3	350832-4	3-350943-0	3-643228-0
4	UL94V-0	In-Line	770019-1	770026-1	Pre-tin	350792-1	641968-1	350793-1	350826-1	643416-1	350833-1	1-350944-0	643230-1
					Duplex[1]	350792-3	—	350793-3	350826-4	—	350833-4	3-350944-0	3-643230-0
5	UL94V-0	In-Line	770016-1	—	Pre-tin	640900-1	643406-1	—	640901-1	—	—	1-350945-0	643232-1
					Duplex[1]	640900-3	—	—	640901-3	—	—	3-350945-0	3-643232-0
6	UL94V-0	Matrix	770020-1	770027-1	Pre-tin	350711-1	641970-1	350732-1	350827-1	643424-1	350834-1	—	—
					Duplex[1]	350711-4	641970-3	350732-4	350827-4	643424-3	350834-4	—	—
9	UL94V-0	Matrix	770021-1	770028-1	Pre-tin	350712-1	641972-1	350742-1	350828-1	643426-1	350835-1	—	—
					Duplex[1]	350712-4	641972-3	350742-4	350828-4	643426-3	350835-4	—	—
12	UL94V-0	Matrix	770022-1	770029-1	Pre-tin	350713-1	641974-1	350737-1	350829-1	643428-1	350836-1	—	—
					Duplex[1]	350713-4	641974-3	350737-4	350829-4	—	350836-4	—	—
15	UL94V-0	Matrix	770023-1	770030-1	Pre-tin	350714-1	641976-1	350738-1	350830-1	643430-1	350837-1	—	—
					Duplex[1]	350714-4	641976-4	350738-4	350830-4	—	350837-4	—	—

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Universal MATE-N-LOK II Plug and Cap housings accept pin or socket contacts. Use the appropriate contacts in the Plug housing as required by the mating component.

Note: All part numbers are RoHS Compliant.

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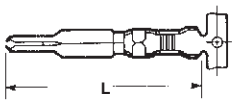
Universal MATE-N-LOK II Connectors (Continued)

Contacts

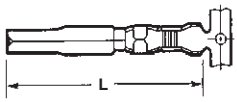
Split pin diameter .086 [2.18]
Stock thickness .012 [.305]
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings.

Related Product Data

Product Specification
108-1090 Universal MATE-N-LOK II Connectors
Application Specification
114-1043 Universal MATE-N-LOK II Contacts
Performance Characteristics— pages 189-190
Housings— pages 193-194
Technical Documents— pages 189 and 205-206
Application Tooling— pages 207-210



Pin



Socket

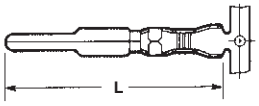
Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim. Pin	L Dim. Socket	Material & Finish	Contact Part Numbers Pin Strip Form	Contact Part Numbers Pin Loose Piece	Contact Part Numbers Socket Strip Form	Contact Part Numbers Socket Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
30-26 [.05-.12]	**.032-.057** .813-1.45	**1.005** 25.53	**.980** 24.90	Phos. Brz. Gold[1]	770011-6	770512-6	770012-6	770416-6	567252-1[6] 567252-4[6]	58439-1
24-18 [.2-.8]	**.040-100** 1.02-2.54	**1.005** 25.53	**.980** 24.90	Brass. Pre-tin	770009-1	770252-1	—	—	567214-1[6] 567214-2[6] 567214-4[6]	91510-1
				Brass. Duplex[2]	1-770009-0	1-770252-0	—	—		
				Phos. Brz. Pre-tin	—	—	770010-3	770253-3		
				Phos. Brz. Duplex[2]	—	—	1-770010-0	1-770253-0		
20-14 [.5-2.0]	**.060-.130** 1.52-3.30	**1.005** 25.53	**.980** 24.90	Brass. Pre-tin	770007-1	770250-1	—	—	567213-1[6] 567213-2[6] 567213-4[6]	91500-1
				Brass. Duplex[2]	1-770007-0	1-770250-0	—	—		
				Phos. Brz. Pre-tin	—	—	770008-3	770251-3		
				Phos. Brz. Duplex[2]	—	—	1-770008-0	1-770251-0		
	.130-.200 3.30-5.08	**.995** 25.27	**.970** 24.63	Brass. Pre-tin	770005-1	770248-1	—	—	567212-1[6] 567212-2[6] 567212-4[6]	91508-1[4] 91506-1[4]
				Brass. Duplex[2]	1-770005-0	1-770248-0	—	—		
				Phos. Brz. Pre-tin	770005-3	—	770006-3	770249-3		
				Phos. Brz. Duplex[2]	1-770005-1	—	1-770006-0	1-770249-0		
12-10 [3.0-5.0]	**.200 max.[3]** 5.08	**1.005** 25.53	**.980** 24.90	Phos. Brz. Pre-tin	770003-3	770246-3	770004-3	770247-3	567211-1[6] 567211-2[6] 567211-4[6]	69710-1[5]
				Phos. Brz. Duplex[2]	1-770003-0	1-770246-0	1-770004-0	1-770247-0		

[1]Gold Finish — Plated with .000030 [.000762] min. gold in mating area and inside wire barrel over .000050 [.00127] min. nickel underplate on entire contact.
[2]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.
[3]There is no insulation barrel on this contact. Insulation maximum diameter is limited by the housing. Use of strain relief is recommended with these contacts.
[4]Use Hand Tool No. **91508-1** for 20–18 AWG and No. **91506-1** for 16–14 AWG.
[5]Hand Tool No. 69710-1 uses die set No. **58380-1** for 12 AWG and No. **58380-2** for 10 AWG.
[6]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Grounding Pin

(Mate first, break last, not for interrupting current)

Solid pin diameter .084 [2.13]
.100 [2.54] longer than standard pin
Stock thickness .012 [.304]
These contacts can be used in either Universal MATE-N-LOK II Plug or Cap housings only.



Wire Size Range AWG [mm²]	Ins. Dia. Range	L Dim.	Material & Finish	Contact Part Numbers Strip Form	Contact Part Numbers Loose Piece	HDM Applicator Part No.	Hand Tool Part No.
20-14 [.5-2.0]	**.060-.130** 1.52-3.30	**1.105** 25.53	Brass. Pre-tin	770193-1	770254-1	567213-1[3] 567213-2[3] 567213-4[3]	91500-1
			Brass. Duplex[1]	1-770193-0	1-770254-0		
	.130-.200 3.30-5.08	**1.085** 27.56	Brass. Pre-tin	770194-1	770255-1	567212-1[3] 567212-2[3] 567212-4[3]	91508-1[2] 91506-1[2]
			Brass. Duplex[1]	1-770194-0	1-770255-0		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area and .000050 [.00127] min. tin in crimp area over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Hand Tool No. **91508-1** for 20–18 AWG and No. **91506-1** for 16–14 AWG.
[3]HDM Applicator part number ending in -1 is used on AMPOMATOR CLS Machine with T or G Terminators, -2 is used on AMP-O-LECTRIC Model K Machine, -4 is used on AMP-O-LECTRIC Model G Machine. See pages 207-210 for further information.

Latch Disengaging Tool
Part No. 58382-1
IS 408-9436

Contact Extraction Tool
(For extracting contacts crimped on 24 AWG or smaller wire)
Part No. 318851-1
IS 408-4371

Contact Insertion Tool
(For inserting contacts applied to small diameter wire)
Part No. 91002-1
IS 408-7347

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

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Universal MATE-N-LOK II Connectors (Continued)

Housing Kits

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material — Nylon
Flammability Rating — UL 94V-0

Related Product Data

Product Specification

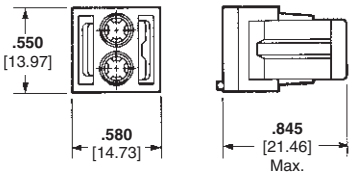
108-1090 Universal MATE-N-LOK II Connectors

Performance Characteristics— pages 189-190
Contacts— page 192
Panel Cutout Recommendations— page 195
Keying Plug— page 196
Strain Reliefs— page 196
Kit Components— page 195
Technical Documents— pages 189 and 205-206

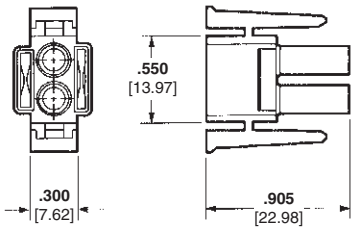
Other Mating Connectors

Universal MATE-N-LOK Housings — page 175
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185

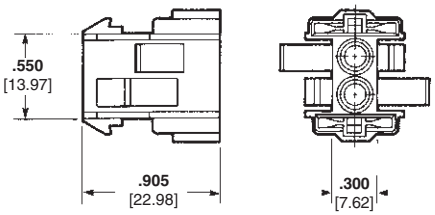
2 Circuit, In-line



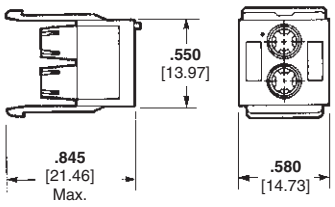
Plug Rear



Plug Front

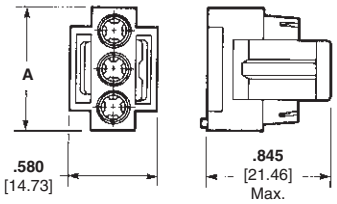


Cap Front

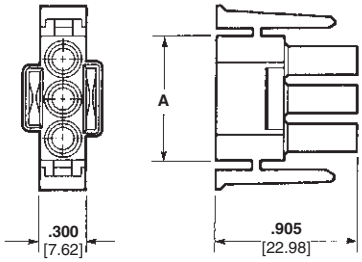


Cap Rear

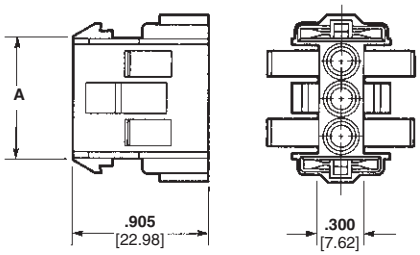
3, 4 and 5 Circuit, In-Line



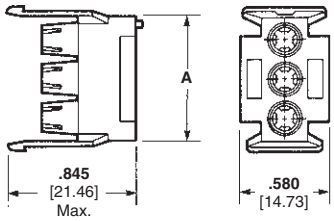
Plug Rear



Plug Front



Cap Front



Cap Rear

Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
2	—	770017-1	770024-1
3	**.800** 20.32	770018-1	770025-1
4	**1.050** 26.67	770019-1	770026-1
5	**1.300** 33.02	770016-1[4]	—

Notes:
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.
4. Mates with standard Universal MATE-N-LOK cap housing P/N 350810-1 and 640900-X or 640901-X Vertical headers.

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

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Universal MATE-N-LOK II Connectors (Continued)

Housing Kits

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material — Nylon
Flammability Rating — UL 94V-0

Related Product Data

Product Specification

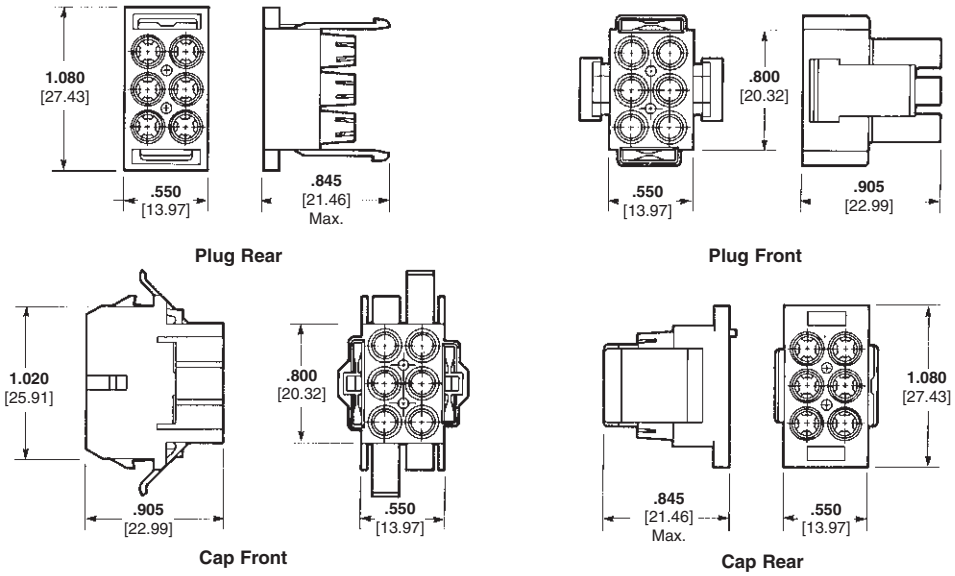
108-1090 Universal MATE-N-LOK II Connectors

Performance Characteristics— pages 189-190
Contacts— page 192
Panel Cutout Recommendations— page 195
Keying Plug— page 196
Strain Reliefs— page 196
Kit Components— page 195
Technical Documents— pages 189 and 205-206

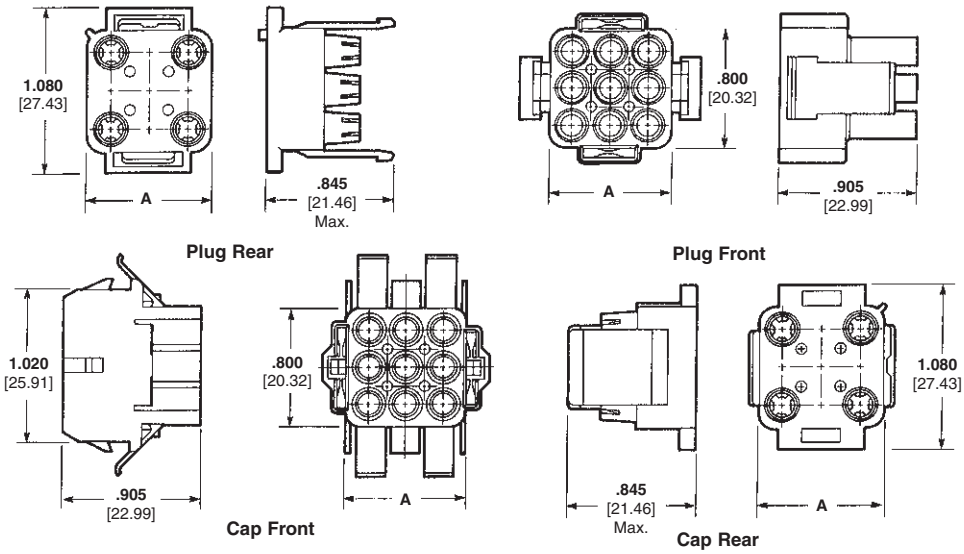
Other Mating Connectors

Universal MATE-N-LOK Housings — page 176
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185

6 Circuit, Matrix



9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Kit Part Numbers (Includes Front and Rear)	
		Plug	Cap
6	—	770020-1	770027-1
9	**.800** 20.32	770021-1	770028-1
12	**1.050** 26.67	770022-1	770029-1
15	**1.300** 33.02	770023-1	770030-1

Notes:
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately. Page 195.
3. Packaging: Bulk — 250 each component per poly bag/box.

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

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Universal MATE-N-LOK II Connectors (Continued)

Housing Components

Free-Hanging or Panel Mount

.250 [6.35] Centerline spacing

Material — Nylon
Flammability Rating — UL 94V-0

Related Product Data

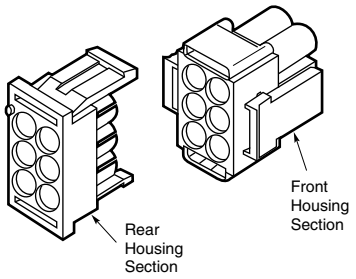
Product Specification

108-1090 Universal MATE-N-LOK II Connectors

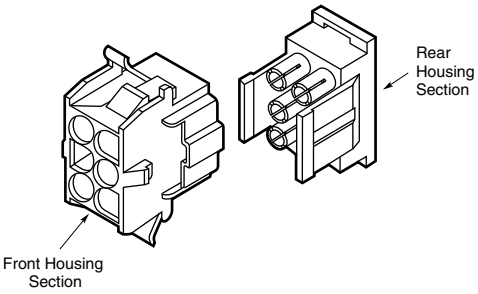
Performance Characteristics— pages 189-190
Contacts— page 192
Illustrations and Dimensions— pages 193-194
Panel Cutout Recommendations— page 195
Keying Plug— page 196
Strain Reliefs— page 196
Technical Documents— pages 189 and 205-206

Other Mating Connectors

Universal MATE-N-LOK Connectors — page 176
Universal MATE-N-LOK Headers — pages 182-183 and 185
Universal MATE-N-LOK Test Connectors — page 185



Plug Housing



Cap Housing

Number of Circuits	Kit Component Part Numbers					
	Plug			Cap		
	Kit	Front	Rear	Kit	Front	Rear
2	770017-1	770031-1	770032-1	770024-1	770045-1	770046-1
3	770018-1	770033-1	770034-1	770025-1	770047-1	770048-1
4	770019-1	770035-1	770036-1	770026-1	770049-1	770050-1
5	770016-1	770319-1	770320-1	—	—	—
6	770020-1	770037-1	770038-1	770027-1	770051-1	770052-1
9	770021-1	770039-1	770040-1	770028-1	770053-1	770054-1
12	770022-1	770041-1	770042-1	770029-1	770055-1	770056-1
15	770023-1	770043-1	770044-1	770030-1	770057-1	770058-1

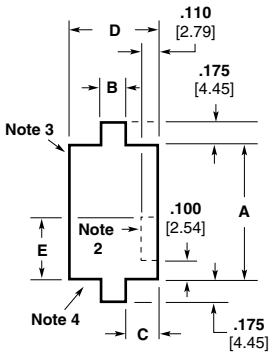
Notes:
1. Kits consist of a front and rear component.
2. Kit components can be purchased separately.

Note: All part numbers are RoHS Compliant.

Recommended Cap Housing Panel Cutouts

View is from cap entry side

Refer to Application Specification 114-1043



Number of Circuits	Dimensions				
	A	B	C	D	E
2	.565 14.35	.340 8.63	.095 2.41	.530 13.46	.250 6.35
3	.815 20.70	.340 8.63	.095 2.41	.530 13.46	.250 6.35
4	1.065 27.05	.340 8.63	.095 2.41	.530 13.46	.250 6.35
6	.565 14.35	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
9	.815 20.70	.480 12.19	.275 6.99	1.030 26.16	.250 6.35
12	1.065 27.05	.480 12.19	.275 6.99	1.030 26.16	.350 8.89
15	1.315 33.40	.480 12.19	.275 6.99	1.030 26.16	.350 8.89

Notes:
1. Recommended panel thickness — .030-.090 [.762-2.286]. Panel must be punched so that housing enters panel in same direction as the punch.
2. Optional — Do not remove this material when keying cap housing to panel.
3. Circuit #1 location when using panel keying with 6, 9, 12 and 15 circuit housings.
4. Circuit #1 location when using panel keying with 2, 3, and 4 circuit housings.

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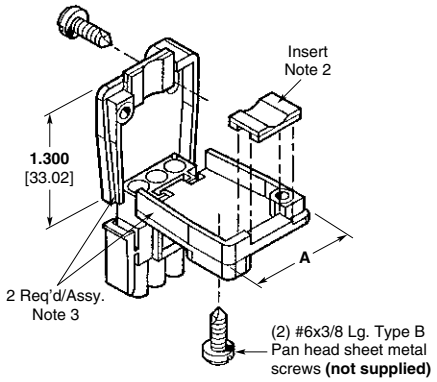
Universal MATE-N-LOK II Connectors (Continued)

Plug or Cap Housing Strain Reliefs

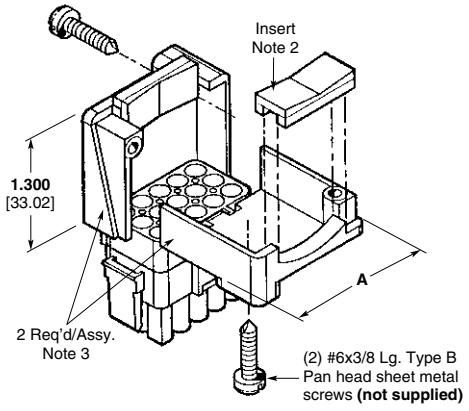
IS 408-3320

Material — Nylon
Flammability Rating — UL 94V-0

2, 3, 4, 5, 6, 9, 12 and 15 Circuit (Enclosed)



In-Line



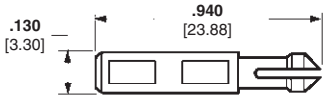
Matrix

Style	Number of Circuits	A Dim.	Insert Supplied	Single Wire Dia. Range	Wire Bundle Dia. Range	Strain Relief Part Numbers
In-Line	2	**.960** 24.38	Yes	**.040 – .190** 1.02 – 4.83	—	640713-1
			No	—	**.200 – .350** 5.08 – 8.89	640713-2
	3	**1.140** 28.96	Yes	**.040 – .190** 1.02 – 4.83	—	640714-1
			No	—	**.200 – .350** 5.08 – 8.89	641945-1
	4	**1.340** 34.04	Yes	**.040 – .190** 1.02 – 4.83	—	641776-1
			No	—	**.200 – .350** 5.08 – 8.89	641776-2
	5	**1.530** 38.86	Yes	**.040 – .190** 1.02 – 4.83	—	643030-1
			No	—	**.200 – .350** 5.08 – 8.89	643030-4
Matrix	6	**1.030** 26.16	Yes	—	**.120 – .650** 3.05 – 16.51	640715-1
	9	**1.030** 26.16	Yes	—	**.120 – .650** 3.05 – 16.51	640716-1
	12	**1.280** 32.51	Yes	—	**.150 – .750** 3.81 – 19.05	640717-1
	15	**1.530** 38.86	Yes	—	**.200 – .850** 5.08 – 21.59	640718-1

Notes:
1. Insert comes attached to strain relief. It can be used to provide additional adjustment for small wire bundles or discarded.
2. Insert to be positioned as shown by dotted lines.
3. Strain relief part number represents one-half of a strain relief. Two of a part number are required for one connector.

Keying Plug

IS 408-3200



Part Number
UL94V-0 Nylon material — **770377-1**

Related Product Data

Housings — pages 193-194
Technical Documents — pages 189 and 205-206

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

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Universal MATE-N-LOK Headers for UMNL II Connectors

PC Board Vertical Pin Headers

.250 [6.35] Centerline spacing

Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

Related Product Data

Product Specification

108-1053 Universal MATE-N-LOK PC Board Headers

Performance Characteristics— pages 189-190

Recommended PC Board Hole Layout— page 199

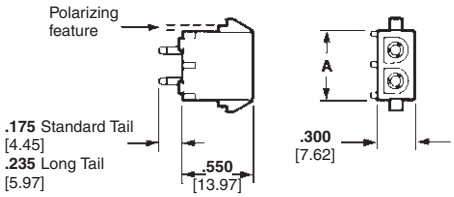
Technical Documents— pages 189 and 205-206

Mating Connectors

Universal MATE-N-LOK II
Plug Housings — pages 193-194

Universal MATE-N-LOK
Plug Housings — page 175

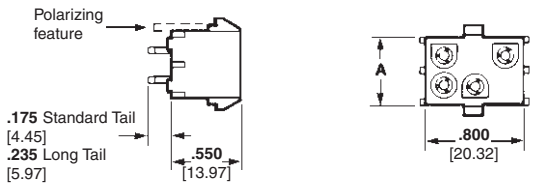
2, 3, 4 and 5 Circuit, In-Line



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers: Standard Tail[2]	Pin Header Part Numbers: Standard Tail Polarized[2]	Pin Header Part Numbers: Long Tail[3]	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK II	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350786-1	641964-1 1-641964-1[4]	350787-1	770017-1	350777-1
		Duplex[1]	350786-3	641964-3	350787-3		
3	.800 20.32	Pre-tin	350789-1	641966-1 1-641966-1[4]	350790-1	770018-1	350766-1
		Duplex[1]	350789-3	—	350790-3		
4	1.050 26.67	Pre-tin	350792-1	641968-1	350793-1	770019-1	350779-1
		Duplex[1]	350792-3	—	350793-3		
5	1.300 33.02	Pre-tin	640900-1	643406-1	—	770016-1	350809-1
		Duplex[1]	640900-3	—	—		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color.

6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Pin Finish	Pin Header Part Numbers: Standard Tail[2]	Pin Header Part Numbers: Standard Tail Polarized[2]	Pin Header Part Numbers: Long Tail[3]	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK II	Mates with Plug Housing Part Number (Using Socket Contacts): Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350711-1	641970-1	350732-1	770020-1	350715-1
		Duplex[1]	350711-4	641970-3	350732-4		
9	.800 20.32	Pre-tin	350712-1	641972-1 1-641972-1[4]	350742-1	770021-1	350720-1
		Duplex[1]	350712-4	641972-3	350742-4		
12	1.050 26.67	Pre-tin	350713-1	641974-1 1-641974-1[4]	350737-1	770022-1	350735-1
		Duplex[1]	350713-4	641974-3	350737-4		
15	1.300 33.02	Pre-tin	350714-1	641976-1	350738-1	770023-1	350736-1
		Duplex[1]	350714-4	641976-4	350738-4		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.
[4]Black in color.

Note: All part numbers are RoHS Compliant.

Catalog 82181
Revised 4-08

www.tycoelectronics.com

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Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

PC Board Vertical Socket Headers

.250 [6.35] Centerline spacing

Material

Housing — Nylon

Flammability Rating — UL94V-0

Contacts — Phosphor bronze

Solder tail diameter .062 [1.57]

Related Product Data

Product Specification
108-1053 Universal MATE-N-LOK PC Board Headers

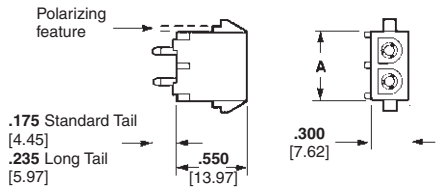
Performance Characteristics— pages 189-190
Recommended PC Board Hole Layout— page 199
Technical Documents— pages 189 and 205-206

Mating Connectors

Universal MATE-N-LOK II
Plug Housings — pages 193-194

Universal MATE-N-LOK
Plug Housings — page 175

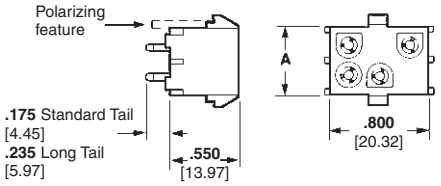
2, 3, 4 and 5 Circuit, In-Line



Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.550 13.97	Pre-tin	350824-1	643412-1	350831-1	770017-1	350777-1
		Duplex[1]	350824-4	643412-3	—		
3	.800 20.32	Pre-tin	350825-1	643414-1	350832-1	770018-1	350766-1
		Duplex[1]	350825-4	643414-3	350832-4		
4	1.050 26.67	Pre-tin	350826-1	643416-1	350833-1	770019-1	350779-1
		Duplex[1]	350826-4	—	350833-4		
5	1.300 33.02	Pre-tin	640901-1	—	—	770016-1	350809-1
		Duplex[1]	640901-3	—	—		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

6, 9, 12 and 15 Circuit, Matrix



Number of Circuits	A Dim.	Socket Finish	Socket Header Part Numbers			Mates with Plug Housing Part Number (Using Pin Contacts)	
			Standard Tail[2]	Standard Tail Polarized[2]	Long Tail[3]	Universal MATE-N-LOK II	Universal MATE-N-LOK
6	.550 13.97	Pre-tin	350827-1	643424-1	350834-1	770020-1	350715-1
		Duplex[1]	350827-4	643424-3	350834-4		
9	.800 20.32	Pre-tin	350828-1	643426-1	350835-1	770021-1	350720-1
		Duplex[1]	350828-4	643426-3	350835-4		
12	1.050 26.67	Pre-tin	350829-1	643428-1	350836-1	770022-1	350735-1
		Duplex[1]	350829-4	—	350836-4		
15	1.300 33.02	Pre-tin	350830-1	643430-1	350837-1	770023-1	350736-1
		Duplex[1]	350830-4	—	350837-4		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.
[2]Use Standard Tail for .062 [1.57] thick PC Board.
[3]Use Long Tail for .125 [3.18] thick PC Board.

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

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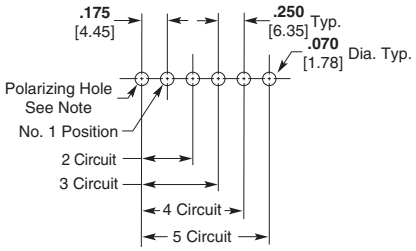
Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

Recommended PC Board Hole Layouts for Pin and Socket Vertical Headers

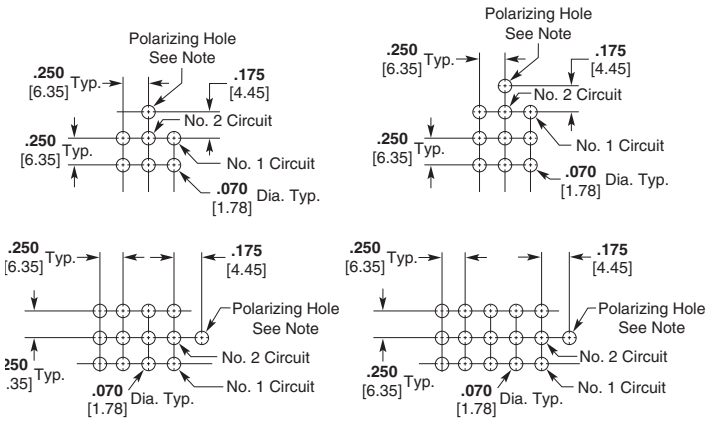
Related Product Data

Vertical Headers — pages 197-198

2, 3, 4 and 5 Circuit, In-Line



6, 9, 12 and 15 Circuit, Matrix



Note: Polarizing hole **.070** [1.78] Dia. required for polarized headers only.

PC Board Vertical Pin Headers with ACTION PIN Contacts

Material and Finish

Housing — PBT, black

Flammability Rating — UL94V-0

Contacts — Copper alloy, plated with tin over nickel on entire contact

Related Product Data

Performance Characteristics— pages 189-190

Technical Documents— pages 189 and 205-206

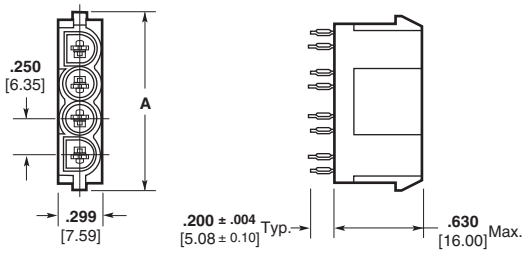
Product Specification

108-5222 ACTION PIN Universal MATE-N-LOK Header Assembly

Mating Connectors

Universal MATE-N-LOK II
Plug Housings — pages 193-194

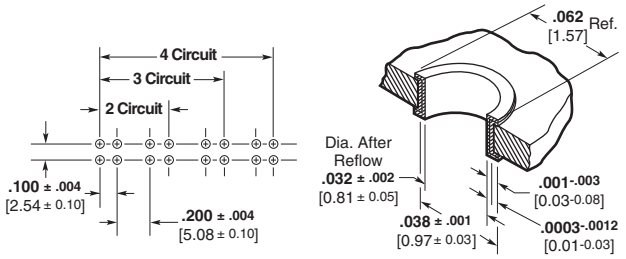
Universal MATE-N-LOK
Plug Housings — page 175



Number of Circuits	A Dim.	Part Number	Mates with Plug Housing Part Number (Using Socket Contacts)	
			Universal MATE-N-LOK II	Universal MATE-N-LOK
2	.750 19.05	173924-1*	770017-1	350777-1
3	1.000 25.40	173925-1*	770018-1	350766-1
4	1.250 31.75	173926-1*	770019-1	350779-1

*Install in PC Board with arbor tool.

Note: All part numbers are RoHS Compliant.



Recommended PC Board Hole Layout **PC Board Hole Dimensions**

Catalog 82181
Revised 4-08

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Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

PC Board Right-Angle Pin and Socket Headers

.250 [6.35] Centerline spacing

Material

Housing — Nylon

Flammability Rating — UL 94V-0

Contacts — Phosphor bronze
Solder tail width .052 [1.32]

Related Product Data

Product Specification
108-1053 Universal MATE-N-LOK PC Board Headers

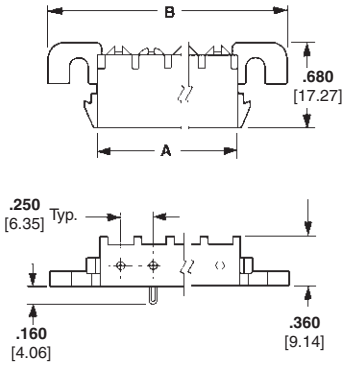
Performance Characteristics— pages 189-190
Technical Documents— pages 189 and 205-206

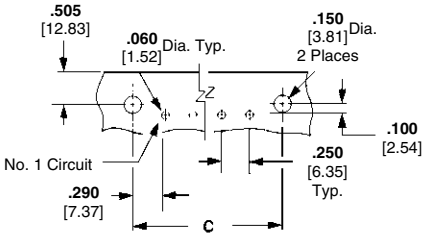
Mating Connectors

Universal MATE-N-LOK II
Plug Housings — pages 193-194

Universal MATE-N-LOK
Plug Housings — page 175

2, 3, 4 and 5 Circuit, In-line





Use 6-32 UNC Pan Head Screw
3/8 [9.53] long for mounting
(Not Supplied)

Recommended PC Board Hole Layout
.062 [1.57] Board Thickness

Number of Circuits	Dimensions A	Dimensions B	Dimensions C	Contact Finish	Part Numbers: Right-Angle Header Pin	Part Numbers: Right-Angle Header Socket	Part Numbers: Mates with Plug Housing — Universal MATE-N-LOK II	Part Numbers: Mates with Plug Housing — Universal MATE-N-LOK
2	.550 13.97	1.245 31.62	.830 21.08	Pre-tin	1-350942-0	643226-1	770017-1	350777-1
				Duplex[1]	3-350942-0	—		
3	.800 20.32	1.495 37.97	1.080 27.43	Pre-tin	1-350943-0	643228-1	770018-1	350766-1
				Duplex[1]	3-350943-0	3-643228-0		
4	1.050 26.67	1.745 44.32	1.330 33.78	Pre-tin	1-350944-0	643230-1	770019-1	350779-1
				Duplex[1]	3-350944-0	3-643230-0		
5	1.300 33.02	1.995 50.67	1.580 40.13	Pre-tin	1-350945-0	643232-1	770016-1	350809-1
				Duplex[1]	3-350945-0	3-643232-0		

[1]Duplex Finish — Plated with .000030 [.000762] min. gold in mating area, matte tin on solder tail end over .000050 [.00127] min. nickel underplate on entire contact.

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

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Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

High Current Contacts

The Louvertac bands have the versatility of being designed into contact dimensions used in existing AMP connectors.

Universal MATE-N-LOK II High Current contacts have been designed to fit into an existing Universal MATE-N-LOK II housing. An initial T-Rise test of a fully energized 4 circuit connector with 10 gage wires has shown a 31 amp capability per line with a 30° T-rise.

Cable-to-Cable

Material

Body — Copper Alloy
Louvertac Band — Beryllium Copper
Finish — Silver
Contact Extraction Tool No. 318851-1
Latch Disengaging Tool No. 58382-1

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

Design Objective—108-1583

Application Specification—114-16021

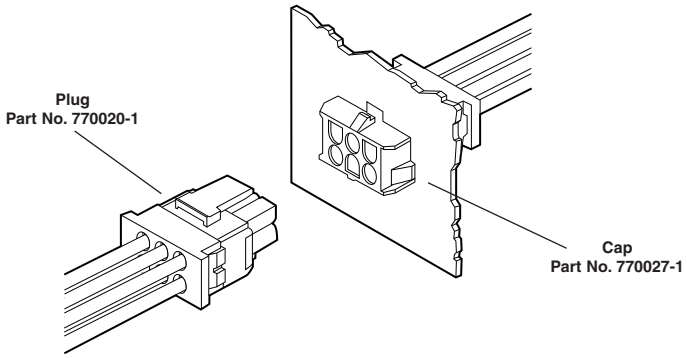
Cable-to-Right-Angle Board

Material

Housing — UL 94V-0 Nylon
Contact Body — Copper Alloy
Louvertac Band — Beryllium Copper
Finish — Silver

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

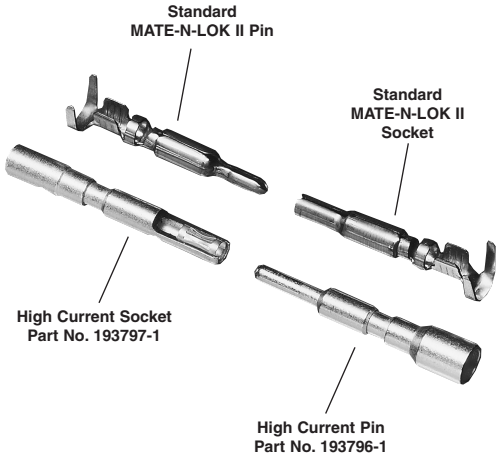
Design Objective—108-1594



Contacts

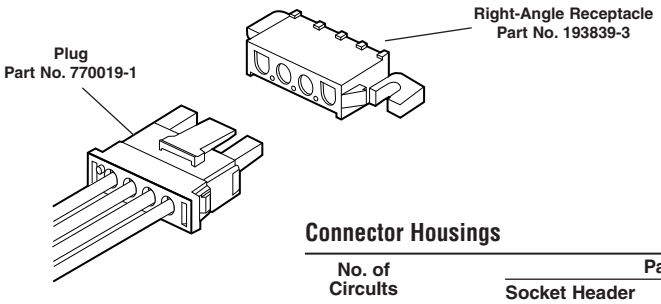
Wire Size AWG	Contact Part Numbers		Crimp Tools
	Pin	Socket	
10	193796-1	193797-1	Daniels Hand Tool #M310 or AMP P/N 356114-1 Positioner #TP1013 or AMP P/N 356337-1
12-14	193841-1	193842-1	

Note: High Current contacts are **not** intermateable with any other Universal MATE-N-LOK contact.



Connector Housings

No. of Circuits	Kit Part Numbers	
	Plug	Cap
2	770017-1	770024-1
3	770018-1	770025-1
4	770019-1	770026-1
5	770016-1	—
6	770020-1	770027-1
9	770021-1	770028-1
12	770022-1	770029-1
15	770023-1	770030-1



Connector Housings

No. of Circuits	Part Numbers	
	Socket Header	Mates with Plug Housing
2	193839-1	770017-1
3	193839-2	770018-1
4	193839-3	770019-1
5	193839-4	770016-1

Notes: 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.
3. Additional information on contacts is available in AMP Precision Pin and Socket Contacts Catalog 65910.

Note: All part numbers are RoHS Compliant.

Catalog 82181
Revised 4-08

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Universal MATE-N-LOK Headers for UMNL II Connectors (Continued)

High Current Vertical Pin Headers

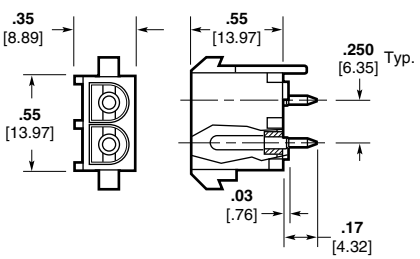
High Current Universal MATE-N-LOK II Vertical Pin Headers are designed to accept Universal MATE-N-LOK II Plugs with High Current Socket contacts. All housings are polarized in order to allow proper circuit board placement. Eight versions are available from 2 circuit to 15 circuits.

Material

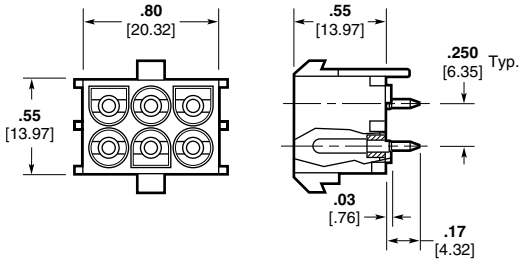
Housing — UL 94V-0 Nylon
Contacts — Copper Alloy
Finish — Silver

- **Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476**
- **Certified by Canadian Standards Association, File No. LR7189**
- **Passed test by VDE under their Registration Number 3980/Continuous Surveillance**

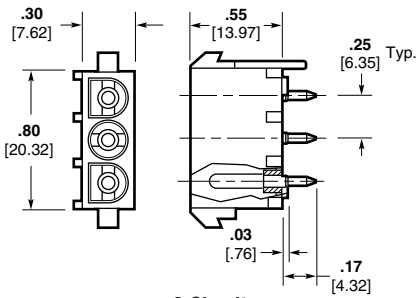
Design Objective —108-1594



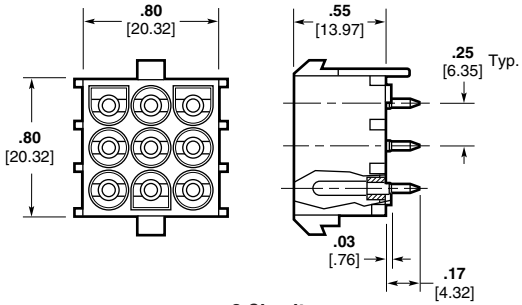
2 Circuit
Part No. 194009-1



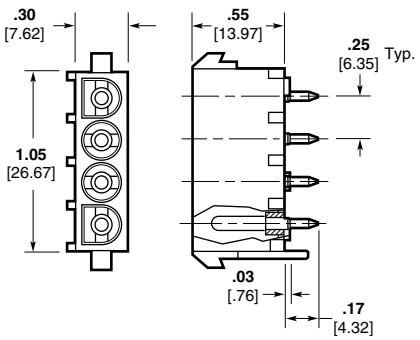
6 Circuit
Part No. 194002-1



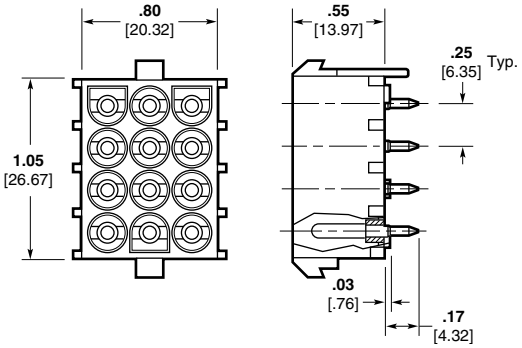
3 Circuit
Part No. 194017-1



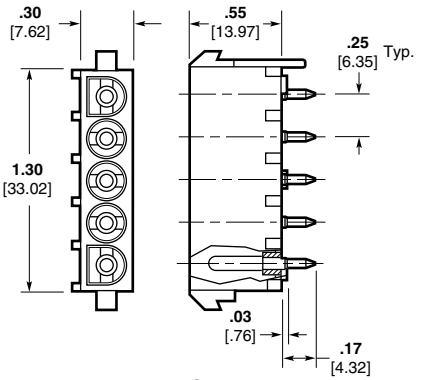
9 Circuit
Part No. 194012-1



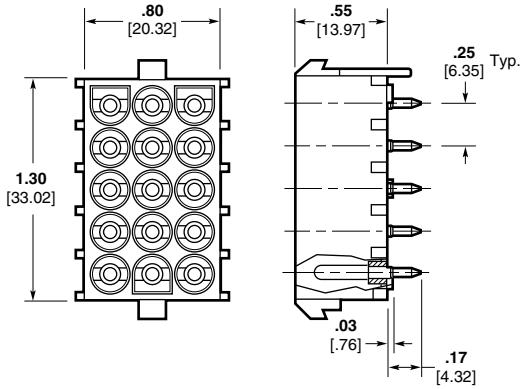
4 Circuit
Part No. 194010-1



12 Circuit
Part No. 194014-1



5 Circuit
Part No. 194018-1



15 Circuit
Part No. 194013-1

Notes: 1. High Current contacts with Louvertac bands are **not** intermateable with any other contact.
2. Additional information on connectors is available in AMP High Current Products Catalog 65141.

Catalog 82181
Revised 4-08

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UK: 44-8706-080-208

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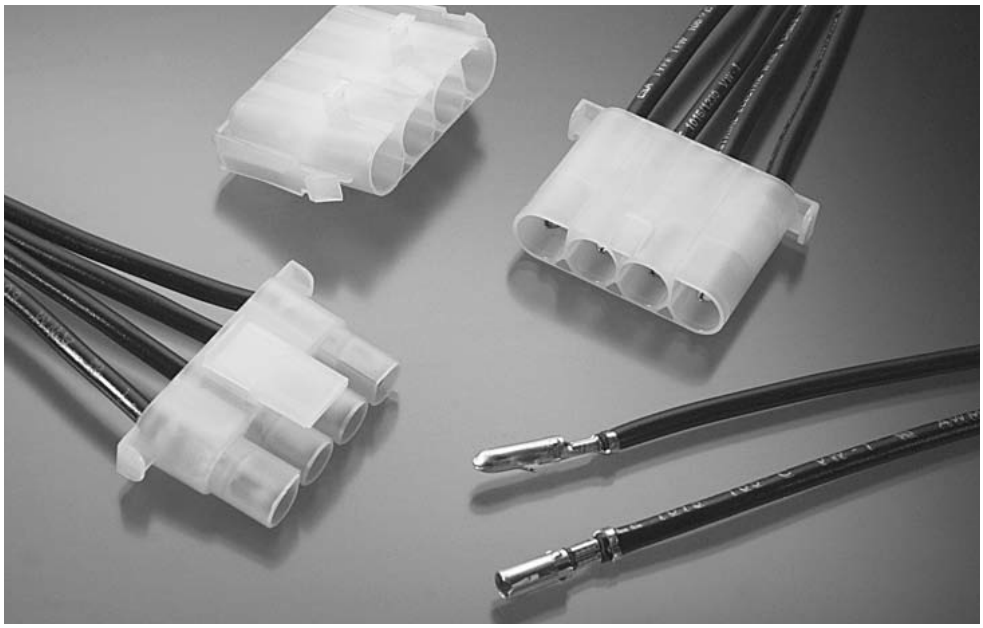
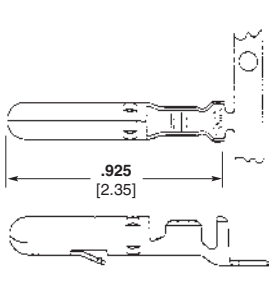
.156 MATE-N-LOK Connectors

Product Facts

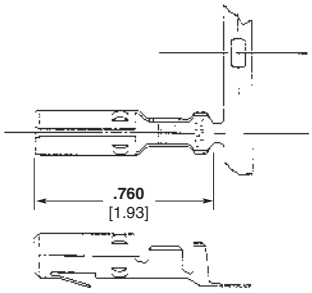
- Positive polarized nylon housings
- Panel mount or free-hanging
- Numbered cavities for easy circuit identification
- Removable, crimp snap-in contacts
- Contacts accept 20-10 AWG wire sizes
- Pin contacts are used in cap housings, socket contacts are used in plug housings
- Not for interrupting current
- Recognized under the Component Program of Underwriters Laboratories Inc., File No. E28476
- Certified by Canadian Standards Association File No. LR7189





Pin

Used in Caps



Socket

Used in Plugs

Contacts

Pin diameter .156 [3.96]

Material and Finish

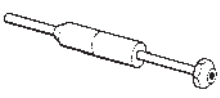
Contacts—
Brass, Pre-tin plated
Stock thickness .018 [.457]

Wire Size Range AWG [mm²]	Ins. Dia. Range	Contact Part Number				HDM[1] Applicator Part No.	Hand Tool Part No.
		Pin		Socket			
		Strip Form	Loose Piece	Strip Form	Loose Piece		
20-14 [.5-2.0]	.125 max.	61086-1	61251-1	61085-1	61250-1	466462-1 466462-2 466462-3	58631-1
12-10 [3.0-6.0]	.185 max.	61234-1	61253-1	61233-1	61252-1	687765-2 687765-3	58632-1

[1]To be used with appropriate application machine. See pages 201-204 for further information.

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

Insertion Tool
Part No. 91002-1
(IS 408-7347)



Extraction Tool
Part No. 691458-1 (Pins)
Part No. 691458-2 (Sockets)
(IS 408-4322)

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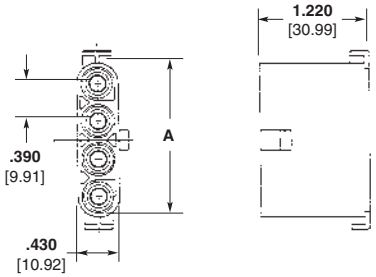
.156 MATE-N-LOK Connectors (Continued)

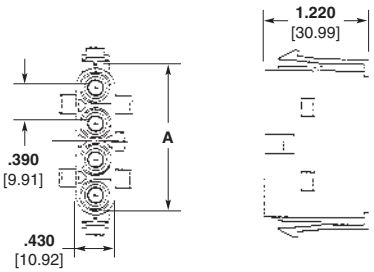
Housings
Free-Hanging or Panel Mount

Related Product Data
Contacts—page 203
Product Specification
108-8002
Application Specification
114-1109

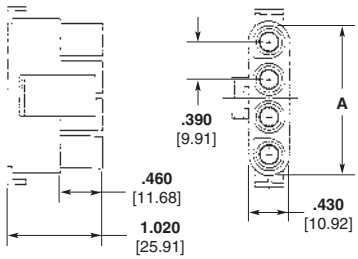
Material
Housings—
Nylon, Natural Color
Flammability Rating—UL94V-2



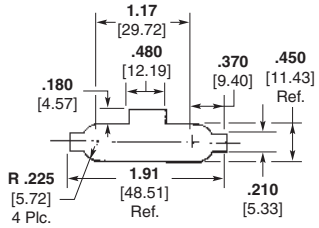
**Pin Housing (Cap)
Free-Hanging
Part Number 794117-1**



**Pin Housing (Cap)
Panel Mount
Part Number 794118-1**



**Socket Housing (Plug)
Part Number 794116-1**



Panel Mount Cutout

Note: Panel must be punched in the same direction as the housing will be inserted.

Number of Circuits	A Dim.	Plug	Cap	
			Free-Hanging	Panel Mount
3	**.048** 1.210	794412-1	794413-1	—
4	**.063** 1.590	794116-1	794117-1	794118-1

Note: All part numbers are RoHS Compliant.

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Technical Documents

Related Product Data

Connectors

2.5 mm Signal Double Lock (SDL)—pages 9-16

Micro MATE-N-LOK 3 mm—pages 17-47

Grace Inertia Connectors (GIC) 3.5—pages 49-52

.062 Commercial Pin and Socket—pages 53-57

Power Double Lock (PDL)—pages 59-81

Mini Universal MATE-N-LOK—pages 83-94

Mini Universal MATE-N-LOK 2—pages 99-107

(MR) Miniature Rectangular—pages 109-118

VAL-U-LOK Connector System—pages 119-124

AMP-DUAC—pages 125-133

5.0 mm Power Key Connectors (PKC)—pages 135-141

.093 Commercial Pin and Socket—pages 143-149

Commercial MATE-N-LOK—pages 151-162

.140 MATE-N-LOK—pages 165-167

Universal MATE-N-LOK—pages 169-188

Universal MATE-N-LOK II—pages 189-195

.156 MATE-N-LOK—pages 203-204

Various technical documents are available for your use:

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

108-1000	Commercial MATE-N-LOK Connectors
108-1022	(MR) Miniature Rectangular Connectors
108-1031	Universal MATE-N-LOK Connectors
108-1031-1	Splash Proof Seal, Universal MATE-N-LOK Connectors
108-1032	.140 Diameter MATE-N-LOK Pin and Socket Connectors
108-1037	.062 Commercial Pin and Socket Connectors
108-1037-1	.062 Commercial Pin and Socket Contacts
108-1038	.093 Commercial Pin and Socket Connector
108-1053	Universal MATE-N-LOK Printed Circuit Board Headers
108-1077	Commercial MATE-N-LOK Printed Circuit Board Headers
108-1078	(MR) Miniature Rectangular Printed Circuit Board Headers
108-1090	Universal MATE-N-LOK II Connectors
108-1542	Mini-Universal MATE-N-LOK Connectors
108-1542-2	Splash Proof Seals for Mini-Universal MATE-N-LOK Connectors
108-1543	Mini-Universal MATE-N-LOK Headers
108-1594	Universal MATE-N-LOK Headers with High Current Contacts
108-1693	Mini-Universal MATE-N-LOK II Connectors
108-1694	Mini-Universal MATE-N-LOK II Headers
108-1699	AMP-DUAC Headers
108-1836	Micro MATE-N-LOK 3 mm Connectors
108-2069	Universal MATE-N-LOK Circular Connector
108-5138	Mini-Universal MATE-N-LOK Connectors (UL 94V-0)
108-5151	Mini-Universal MATE-N-LOK Connectors (UL 94V-2)
108-5155	Commercial MATE-N-LOK Pin Header Assembly
108-5222	Universal MATE-N-LOK Headers with ACTION PIN Contacts
108-5410	Power Double Lock (PDL) Connectors
108-5439	Power Double Lock (PDL) Connectors (SMT)
108-5459	2.5 mm Signal Double Lock (SDL) Connectors
108-5699	5.0 mm Power Key Connectors (PKC)
108-5810	Grace Inertia Connectors (GIC) 3.5
108-8002	.156 Diameter MATE-N-LOK Connectors
108-19099	AMP-DUAC Receptacles
108-49000	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

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

114-1007	.140 Diameter MATE-N-LOK Contacts
114-1010	Universal MATE-N-LOK Connectors
114-1012	Commercial MATE-N-LOK Contacts
114-1013	.062 Commercial Pin and Socket Connectors
114-1014	(MR) Miniature Rectangular Contacts
114-1043	Universal MATE-N-LOK II Connectors (housings, contacts and strain reliefs)
114-1109	.156 Diameter MATE-N-LOK Connectors
114-1111	Mini-Universal MATE-N-LOK 2 Connectors
114-5175	Power Double Lock (PDL) Connectors
114-5203	2.5 mm Signal Double Lock (SDL) Connectors
114-5292	5.0 mm Power Key Connectors (PKC)
114-5306	Grace Inertia Connectors (GIC) 3.5
114-6067	AMP-DUAC Crimping Contacts
114-13000	Micro MATE-N-LOK 3 mm Connectors

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Technical Documents (Continued)

Application Specifications (Continued)

114-13089	Mini-Universal MATE-N-LOK Sealed Connectors
114-16017	Mini-Universal MATE-N-LOK Connectors
114-19048	AMP-DUAC Receptacles (Use of)
114-49000	.093 Commercial Pin and Socket Connectors
114-49001	Commercial MATE-N-LOK IDC Insulation Displacement Connectors

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

408-3186	Terminating Head (PN 231894-1) (Commercial MATE-N-LOK IDC Connector)
408-3200	Universal MATE-N-LOK II Connectors (Housings, Contacts and Accessories)
408-3231	(MR) Miniature Rectangular Connectors (Pin Housing, Socket Housing, Contacts, and Accessories)
408-3234	Mini-Universal MATE-N-LOK Connectors
408-3320	Universal MATE-N-LOK Strain Relief Assembly and Keying Plug
408-3392	Universal MATE-N-LOK Splash Proof Seals
408-3393	Mini-Universal MATE-N-LOK 2 Connectors
408-4118	Contact Extraction Tool (PN 189727-1)
408-4322	Contact Extraction Tools [PN 691458-1 (Pins) and 691458-2 (Sockets)]
408-4370	Contact Extraction Tool (PN 318831-1)
408-4371	Contact Extraction Tool (PN 318851-1)
408-4375	Contact Extraction Tool (PN 318837-1)
408-4378	Extraction Tool (PN 318845-1)
408-6790	Hand Tool Handle (PN 58074-1)
408-7158	Contact Extraction Tools [PN 1-305183-1 (Pins) and 1-305183-2 (Sockets)]
408-7166	Commercial MATE-N-LOK Panel Mount Connector
408-7200	Commercial MATE-N-LOK Free-Hanging Connector
408-7201	Commercial MATE-N-LOK Detent Engagement Connectors, 2 and 3 circuit
408-7209	Commercial MATE-N-LOK Commoning Tabs
408-7211	Pin and Socket Extraction Tool (PN 465644-1)
408-7215	Commercial MATE-N-LOK Single Circuit Connector
408-7300	MATE-N-LOK Contact and Housing Selection Charts
408-7347	Contact Insertion Tool (PN 91002-1)
408-7582	Commercial MATE-N-LOK Keying Plug
408-7714	Universal MATE-N-LOK Connectors
408-7763	Power Unit (PN 91112-2)
408-7984	Contact Insertion Tool (PN 455830-1)
408-9330	Head (PN 231920-2) (Used with Arbor Tool PN 91085-2)
408-9436	Latch Disengaging Tool (PN 58382-1)
408-9570	Contact Extraction Tool (PN 455822-2)
408-10003	Contact Retention Test Tool (PN 1586700-1)
408-10017	Universal MATE-N-LOK Sealed Bulkhead Connectors
411-5105	Mini-Universal MATE-N-LOK Connectors
411-5638	Power Double Lock (PDL) Connectors

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Application Tooling

Semiautomatic Machines

AMP-O-LECTRIC Model "G" Terminating Machines, 354500-1, -9, -11

Semiautomatic bench machines for crimping reeled terminals and contacts, featuring a quiet and reliable direct motor drive, microprocessor controls for ease of setup and operation, and guarding and lighting designed for operator convenience and safety. All models are equipped with either manual or automatic precision adjustment of crimp height. Machine-mounted sensors are available for crimp quality monitoring using conventional miniature-style applicators.

Specifications
Width—18.7-25.3 [475-643] depending on applicator type
Depth—21.5-28.1 [546-713] depending on applicator type
Height—20 [508]
Weight—240 lb [110 kg]
Electrical—120 or 220 VAC, 50 or 60 Hz
Air—90-110 psi [6.21-7.59 bar], 6 scfm [0.00282 m^3/s] when required with air-feed applicators
Wire Range—26-10 AWG [0.12-6 mm^2] solid or stranded, depending on product applied
For more information, request Catalog **65828**, Catalog **82275 [Crimp Quality Monitor (CQM)].**

AMP-O-MATIC Stripper-Crimper Machine, 854040-3, -4

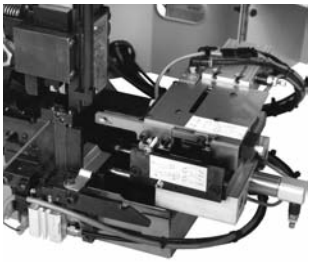
Semiautomatic bench crimping machines that also strip the wire, and are therefore used for terminating jacketed cable. Feature manual precision adjustment of crimp height, keyed strip blades for faster, more accurate setups, and an efficient scrap removal system. All adjustments can be made from the front of the machines without special tools. Available with crimp quality monitoring.

Specifications
Width—14 [355]
Depth—18 [457]
Height—33 [838] without reel
Weight—150 lb [68 kg]
Electrical—120 VAC, 50 or 60 Hz, .5 A
Air—80-100 psi [5.52-6.90 bar], 3.5 scfm [0.00165 m^3/s]
Wire Range—32-14 AWG [0.03-2 mm^2]
For more information, request Catalog **65004.**

AMP 3K/40 and AMP 5K/40 Terminators

As value oriented terminators, the AMP 3K/40 and AMP 5K/40 are designed for customers that require the increased output and quality of a semiautomatic machine at a competitive price. By incorporating the most commonly requested features as standard and offering a long list of optional equipment, these terminators offer flexibility to meet the specific needs of various applications at the lowest possible cost.

Optional Stripping Module for the AMP 3K/40, AMP 5K/40 and AMP-O-LECTRIC Model G Terminators



The combination of the Stripping Module with the AMP-O-LECTRIC Model G Terminator or the AMP 3K/40, 5K/40 provides an economical, proficient method of stripping wire and crimping terminals on the same machine. Wires are stripped moments before crimping, meaning there is virtually no chance of damaging wire conductors during handling or storage. Once the wire is fed into the start sensor the Stripping Module does the rest, improving placement accuracy.

For more information, request Catalog **1309085.**

Crimp Quality Monitor

This system measures the crimp height of each termination as it is made. It also evaluates the quality of each crimp. If a crimp is questionable, the monitor alerts the operator with both visual and audible alarms. It also features ports for printing and networking. For use with AMP-O-LECTRIC Model "G" and AMP-O-MATIC Stripper-Crimper Machines, the monitor is mounted to the machine. For use with AMPOMATOR CLS IV+ Machines, it is integrated into the machine's operating system, with the displays appearing on the machine's touch screen.

For more information, request Catalog **82275.**

Note: This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

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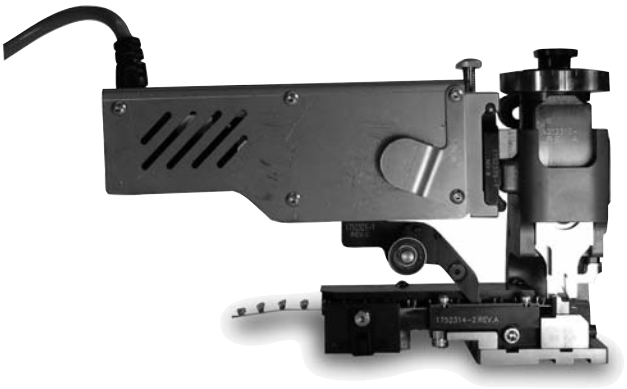
Application Tooling (Continued)

Automatic Machines

AMPOMATOR System III Leadmaker

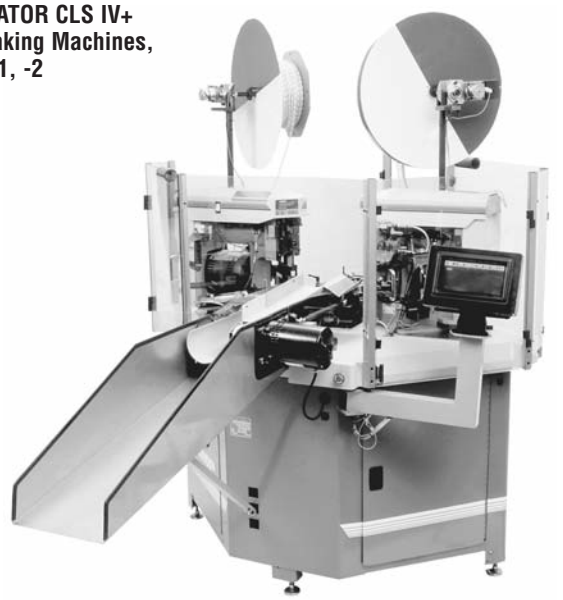
The AMPOMATOR System III Leadmaker is designed for the demands of low-volume/ high-mix manufacturing and precision quality. This lead-maker combines the best wire processing capabilities with new technologies in terminal feeding and machine set-up found in the System III Applicator to offer significant advantages for higher through-put and efficiencies. *Request Catalog 1654956-5.*

System III Applicator



The System III Applicator introduces several new technologies into the applicator including a precision servo-electric motorized feeding system, a built-in data module for storing terminal crimp and set-up information, a precision fit round ram, and a newly designed terminal depressor. It still utilizes the proven quality of the HD-M crimper and anvil tooling.

AMPOMATOR CLS IV+ Lead-Making Machines, 356500-1, -2



Fully-automatic machines that measure, cut, strip and terminate single leads. Microprocessor-controlled, and programmed and operated using an easy-to-follow, menu-driven touchscreen. Features include direct-drive terminating units with precision crimp height adjustment, fully programmable setups, wire runout and splice detection, and motorized pre-feed with wire straightener. Crimp quality monitoring is also available.

Specifications

Width—159 [4 039]
Depth—68 [1 730]
Height—90 [2 285] min., with 24 [610] dia. reel
Weight—2 000 lb [907 kg]
Electrical—220 VAC, 50 or 60 Hz, 1 ∅, 20 A with neutral and ground
Air—90 psi [6.21 bar], 15 scfm [0.00708 m^3/s] sustained
Wire Range—26-10 AWG [0.12-6 mm^2] stranded, 26-16 AWG [0.12-1.4 mm^2] solid
Lead Lengths—3-90 [76.2-2 286], 90-1 000 [2 286-25 400] with long lead conveyors

For more information, request Catalog **124324.**

EDGE Electronic Applicator Counter

The new, versatile EDGE applicator counter tracks wearable tool usage for the most effective maintenance planning. The completely electronic counter, with clear LCD display, indicates cycles since installation. By performing maintenance at measured intervals with pre-set limits, operators avoid breakdowns and rejects caused by tool wear or mis-adjustment.

For more information, request Catalog **1773385**.

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Application Tooling (Continued)

Applicator Styles

End- and Side-Feed Heavy-Duty Miniature (HDM) Applicators

- Handle a wide variety of products
- Used with both semi- and fully-automatic machines
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes

Stripper-Crimper (SCA) Applicators

- For use with AMP-O-MATIC Stripper-Crimper Machines
- Terminate a wide variety of open-barrel products
- Quickly interchangeable to run different products
- Easily repaired
- Simple dial-in settings to handle similar products and various wire sizes
- CQM applicators are available

Crimp Quality Monitor (CQM) Applicators

- Same basic features as regular HDM and SCA applicators
- Recommended for use with machines featuring manual or automatic precision-adjust
- Use two built-in sensors to provide the Crimp Quality Monitor with data to measure crimp height, and evaluate the quality of each crimp

Applicator and Hand Tool Selection Guide

Density	Product Line	Applicators			Hand Tools	
		A	B	C	D	E
High	2.5 mm Signal Double Lock (SDL)	*	*	*	X	-
	Micro MATE-N-LOK 3 mm	X	X	X	X	-
	Grace Inertia Connectors (GIC) 3.5	*	*	*	X	-
	.062 Commercial Pin and Socket	X	X	X	-	X
	Power Double Lock (PDL)	*	*	*	X	-
	Mini-Universal MATE-N-LOK	X	X	X	X	X
	Sealed Mini-Universal MATE-N-LOK	X	X	X	X	-
	Mini-Universal MATE-N-LOK 2	X	X	X	X	X
	(MR) Miniature Rectangular	X	X	X	X	-
	VAL-U-LOK Connector System	X	-	-	-	X
	AMP-DUAC	X	X	-	X	-
Standard	5.0 mm Power Key Connectors (PKC)	*	*	*	X	-
	.093 Commercial Pin and Socket	X	X	X	-	X
	Commercial MATE-N-LOK	X	X	X	X	X
	.140 MATE-N-LOK	X	X	X	X	-
	Universal MATE-N-LOK	X	X	X	X	X
	Universal MATE-N-LOK II	X	X	X	X	X
	.156 MATE-N-LOK	X	-	-	X	-

A—Heavy Duty Miniature (HDM) Applicators
B—Stripper-Crimper Applicators (SCA)
C—Crimp Quality Monitor (CQM) Applicators
D—CERTI-CRIMP Hand Tool
E—PRO-CRIMPER III Commercial Hand Tool
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.

Related Product Data

Contacts

2.5 mm Signal Double Lock (SDL)—page 12
Micro MATE-N-LOK 3 mm—page 22
Grace Inertia Connectors (GIC) 3.5—page 50
.062 Commercial Pin and Socket—page 55
Power Double Lock (PDL)—page 61
Mini Universal MATE-N-LOK—page 84
Mini Universal MATE-N-LOK 2—pages 100-101
(MR) Miniature Rectangular—page 112
VAL-U-LOK Connector System—page 120
AMP-DUAC—pages 126-127
5.0 mm Power Key Connectors (PKC)—page 137
.093 Commercial Pin and Socket—page 145
Commercial MATE-N-LOK—pages 155-156
.140 MATE-N-LOK—page 166
Universal MATE-N-LOK—pages 172-173
Universal MATE-N-LOK II—page 192
.156 MATE-N-LOK—page 203

Mechanical Hand Tools

CERTI-CRIMP II Straight Action Hand Tools (SAHT) 91501-1, 91502-1

Premium grade hand tools. Feature ratchet control to provide complete crimp cycle. Die sets close in a straight line. Include a contact locator and wire stop, plus an insulation crimp adjustment lever, when applicable. Approximate weight 1.3 lb [0.59 kg]

For more information, request Catalog **65780**.

Note: This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

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Application Tooling (Continued)

Hand Tools

Related Product Data

Contacts

2.5 mm Signal Double Lock (SDL)—page 12
Micro MATE-N-LOK 3 mm—page 22
Grace Inertia Connectors (GIC) 3.5—page 50
.062 Commercial Pin and Socket—page 55
Power Double Lock (PDL)—page 61
Mini Universal MATE-N-LOK—page 86
Mini Universal MATE-N-LOK 2—pages 100-101
(MR) Miniature Rectangular—page 112
VAL-U-LOK Connector System—page 120
AMP-DUAC—pages 126-127
5.0 mm Power Key Connectors (PKC)—page 137
.093 Commercial Pin and Socket—page 145
Commercial MATE-N-LOK—pages 155-156
.140 MATE-N-LOK—page 166
Universal MATE-N-LOK—pages 172-173
Universal MATE-N-LOK II—page 192
.156 MATE-N-LOK—page 203

CERTI-CRIMP II Hand Tool

Catalog 65780

PRO-CRIMPER III Hand Tool

Catalog 82276

Features	CERTI-CRIMP Hand Tool	PRO-CRIMPER III Hand Tool
Field Repair/Prototyping	X	X
OEM Applications/Low Volume Production	X	—
Ratchet Control	X	X
Brush/Bellmouth Control	X	X
Precision Crimp Height Control	X	X
Little/No Operator Training	X	—
Insulation Adjustment	X	—
Repairable	X	—

Density	Product Line	CERTI-CRIMP Hand Tool		PRO-CRIMPER III Hand Tool	
		Part Number	Instruction Sheet	Part Number	Instruction Sheet
High	2.5 mm Signal Double Lock (SDL)	234603-1	411-5735	—	—
		234604-1	411-5736	—	—
	Micro MATE-N-LOK 3 mm	91501-1	408-8547	—	—
		91502-1	408-8547	—	—
	Grace Inertia Connectors (GIC) 3.5	1596277-1	411-78101	—	—
	.062 Commercial Pin & Socket	—	—	90870-1	408-9965
		—	—	90869-1	408-9964
	Power Double Lock (PDL)	91567-1	408-8547	—	—
		91569-1	408-8547	—	—
	Mini-Universal MATE-N-LOK and Sealed Mini-Universal MATE-N-LOK	91529-1	408-8547	90758-1	408-9938
		91522-1	408-8547	90759-1	408-9962
		91594-1	408-8547	90760-1	408-9963
		90717-2	408-4443	—	—
	Mini-Universal MATE-N-LOK 2	91529-1	408-8547	—	—
		91522-1	408-8547	—	—
		91594-1	408-8547	—	—
		90717-2	408-4443	—	—
	(MR) Miniature Rectangular	91534-1	408-8547	58514-1	408-9973
		91526-1	408-8547	58514-1	408-9973
	VAL-U-LOK Connector System	—	—	91387-1	408-8917
		—	—	91388-1	408-8918
	AMP-DUAC	90714-1	408-4385	—	—
		734202-2	—	—	—
Standard	5.0 mm Power Key Connectors (PKC)	—	—	—	—
	.093 Commercial Pin & Socket	—	—	90872-1	408-9967
		—	—	90871-1	408-9966
	Commercial MATE-N-LOK	91515-1	408-8547	—	—
		91512-1	408-8547	90574-1	408-9886
		91504-1	408-8547	90575-1	408-9887
	.140 MATE-N-LOK	91552-1	408-8547	—	—
		69710-1[1]	408-2095	—	—
		58373-1[2]	408-9442	—	—
		58374-1[2]	408-9442	—	—
	Universal MATE-N-LOK and Universal MATE-N-LOK II	58439-1	408-9591	—	—
		91510-1	408-8547	90548-1	408-9885
		91500-1	408-8547	90546-1	408-9883
		91508-1	408-8547	90547-1	408-9884
		91506-1	408-8547	90547-1	408-9884
		69710-1[1]	408-2095	—	—
		58380-1[2]	408-9433	—	—
		58380-2[2]	408-9433	—	—
	.156 MATE-N-LOK	58631-1	408-4341	—	—
		58632-1	408-4340	—	—

[1]Hand tool requires die set. [2]Die set.
Note: This listing is for reference purposes only. To obtain part numbers for specific applications call Technical Support.

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Applicator Options

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
			Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators)	Used on *AMP-O-MATIC* Stripper-Crimper Machine
	Pin	Socket	*AMP-O-LECTRIC* Model K Machine	*AMP-O-LECTRIC* Model G Machine		
2.5 mm Signal Double Lock (SDL) Contacts	917764-1	917683-1	*	*	*	*
	917765-1	917684-1	*	*	*	*
Micro MATE-N-LOK 3 mm Connector System	1-794608-0	—	1385194-2	1385194-3	1385194-1	—
	1-794608-1	—				
	1-794608-2	—				
	1-794609-0	—	1385377-2	1385377-3	1385377-1	—
	1-794609-1	—				
	1-794609-2	—				
	—	794606-1	680893-2	680893-3	680893-1	—
	—	1-794606-1				
	—	1-794606-2				
	—	794607-1	680894-2	680894-3	680894-1	—
	—	1-794607-1				
	—	1-794607-2				
Grace Inertia Connectors (GIC) 3.5	1565080-1	1565079-1	*	*	*	*
	1612335-1	1612334-1	*	*	*	*
.062 Commercial Pin and Socket Contacts	640391-1	640392-1	466686-2	466686-3	466686-1	466955-1
	640391-5	640392-5				
	—	640392-2				
	—	794046-1				
	350629-1	350628-1	687996-2	687996-3	687996-1	—
	—	350628-2				
	350629-5	350628-5				
	—	350628-6				
	—	794103-1				
Power Double Lock (PDL)	177916-1	177914-1	*	*	*	*
		177914-2†	*	*	*	*
	177917-1	177915-1	*	*	*	*
		177915-2†	*	*	*	*
	† High contact pressure type.					
Mini-Universal MATE-N-LOK Contacts	770835-1	770834-1	567418-2	567418-3	567418-1	—
	1-770835-0	1-770834-0				
	770901-1	770902-1	567066-4	567066-5	567066-3	466990-2
	1-770901-0	1-770902-0				
	770903-1	770904-1	567067-2	567067-3	567067-1	466986-1
	1-770903-0	1-770904-0				
	171636-1	171637-1	680582	567251-1	680582	567902-1
	—	171637-3				
Mini-Universal MATE-N-LOK 2 Contacts	794216-1	794217-1	567418-2	567418-3	567418-1	—
	1-794216-0	1-794217-0				
	794218-1	794219-1	567066-4	567066-5	567066-3	466990-2
	1-794218-0	1-794219-0				
	794220-1	794221-1	680854-2	680854-3	680854-1	466986-1
	1-794220-0	1-794221-0				
	794222-1	794223-1	680582-2	680582-3	—	567902-1
	1-794222-0	1-794223-0				
(MR) Miniature Rectangular Contacts	350968-1	794000-1	466352-2	466352-3	466352-1	—
	350968-2	794000-2				
	350967-1	641294-1	466351-2	466351-4	466351-1	466913-1
	350967-2	641294-2				
	350969-1	—	466351-2	466351-4	466351-1	466913-1
	350969-2	—				

Note: Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
* Contact the Tooling Assistance Center (TAC) at 1-800-722-1111 for Applicator Part Numbers.
Note: All part numbers are RoHS Compliant.

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Applicator Options (Continued)

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
			Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators)	Used on *AMP-O-MATIC* Stripper-Crimper Machine
	Pin	Socket	*AMP-O-LECTRIC* Model K Machine	*AMP-O-LECTRIC* Model G Machine		
VAL-U-LOK Connector System	794955-1	794956-1	1385817-2	1385817-3	1385817-1	—
	794955-2	794956-2				
	794955-3	794956-3				
	794955-4	794956-4				
	794957-1	794958-1	1385448-2	1385448-3	1385448-1	—
	794957-2	794958-2				
	794957-3	794958-3				
	794957-4	794958-4				
AMP-DUAC	794576-1	106529-2	680308-2	680308-3	—	567959-1
		1-794138-3				
	794578-1	106528-2	680307-2	680307-3	—	567960-1
		1-794139-3				
	—	1-794140-3	680350-2	680350-3	—	—
		794418-1				
5.0 mm Power Key Connectors (PKC)	—	1376347-1	*	*	*	*
	—	1376348-1	*	*	*	*
.093 Commercial Pin and Socket Contacts	350418-1	350417-1	466656-2	466656-3	466656-1	466922-1
	—	350417-3				
	350418-5	350417-5				
	350416-1	350415-1	466878-2	466878-3	466878-1	466959-1
	350416-5	350415-5				
	770530-1	770529-1	567337-4	567337-6	567337-3	—
	770385-1	770383-1	567273-2	567273-4	567273-3	—
	—	—				
Commercial MATE-N-LOK Contacts	350079-1	350078-1	466426-2	466426-3	466426-1	—
	350079-4	350078-4				
	350079-5	350078-5				
	61116-1	61314-1	466320-2	466320-4	466320-1	466917-1
	61116-4	61314-4				
	61116-5	61314-5				
	61116-6	61314-6				
	61116-7	61314-7				
	61118-1	61117-1	687763-2	687763-6	687763-1	466920-1
	61118-4	61117-4				
	61118-5	61117-5				
	61118-6	61117-6				
	61118-7	61117-7				
	350558-1	350557-1	687898-2	687898-4	687898-1	—
	350558-4	350557-4				
	61527-2	—	466320-2	466320-4	466320-1	466917-1
.140 MATE-N-LOK Contacts	61627-1	61626-1	567306-2	567306-3	567306-1	—
	61627-2	61626-2				
	350201-1	350200-1	567309-2	567309-3	587309-1	—
	350201-2	350200-2				
Universal MATE-N-LOK Contacts	350924-1	350925-1	466616-2	466616-3	—	—
	350924-6	350925-6				
	350561-1	350851-1	466320-2	466320-4	466320-1	466917-1
	—	350570-1				
	350561-2	350851-2				
	—	350570-2				
	350561-7	350851-7				
	—	350570-7				
	350561-3	350570-3				
	—	350570-6				

Note: Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
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Applicator Options (Continued)

	Strip Form Contact Part Number		Heavy-Duty Miniature Applicator Part Numbers			
			Used on Bench Top Terminators		Used on Automatic Leadmaking Equipment (*AMPOMATOR* CLS Machine with T or G Terminators)	Used on *AMP-O-MATIC* Stripper-Crimper Machine
	Pin	Socket	*AMP-O-LECTRIC* Model K Machine	*AMP-O-LECTRIC* Model G Machine		
Universal MATE-N-LOK Contacts (Continued)	350218-1	350536-1	687763-2	687763-6	687763-1	466920-1
	350218-2	350536-2				
	350218-7	350536-7				
	350218-3	350536-3				
	350218-6	350536-6				
	350538-1	350537-1	687926-2	687926-6	687926-1	466989-1
	350538-2	350537-2				
	350538-7	350537-7				
	350538-3	350537-3				
	350538-6	350537-6				
	350873-1	350874-1	466588-2	466588-3	466588-1	—
	350873-3	350874-3				
	350922-3	350923-3	466597-2	466597-3	466597-1	—
	350922-6	350923-6				
	350922-4	350923-4				
	350699-1	—	466320-2	466320-4	466320-1	466917-1
	350699-2	—				
	350699-7	—				
	350687-1	—	687763-2	687763-6	687763-1	466920-1
	350687-2	—				
	350687-7	—				
	350700-1	—	687926-2	687926-6	687926-1	466989-1
	350700-2	—				
	350700-7	—				
	770210-1	—	567216-2	567216-3	567216-1	466920-1
	350654-1	—	687763-2	687763-6	687763-1	
	770234-3	—	466597-2	466597-3	466597-1	
Universal MATE-N-LOK II Contacts	770011-6	770012-6	—	567252-4	567252-1	—
	770009-1	—	—	567214-4	567214-1	567914-1
	1-770009-0	—				
	—	770010-3				
	—	1-770010-0				
	770007-1	—	—	567213-4	567213-1	567913-1
	1-770007-0	—				
	—	770008-3				
	—	1-770008-0				
	770005-1	—	—	567212-4	567212-1	—
	1-770005-0	—				
	—	770006-3				
	1-770005-1	1-770006-0				
	770003-3	770004-3	—	567211-4	567211-1	—
	1-770003-0	1-770004-0				
	770193-1	—	—	567213-4	567213-1	567913-1
	1-770193-0	—				
	770194-1	—	—	567212-4	567212-1	—
	1-770194-0	—				
.156 MATE-N-LOK Contacts	61086-1	61085-1	466462-1	466462-3	466462-1	—
	61234-1	61233-1	687765-2	687765-2	—	—

Note: Stripper Crimper (SCA) and Crimp Quality Monitor Applicators may be available. Call Technical Support for Part Numbers.
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Product Feature Comparisons

High Density	2.5 mm Signal Double Lock (SDL)	Micro MATE-N-LOK 3 mm	Grace Inertia Connectors (GIC) 3.5	.062 Commercial Pin & Socket	Power Double Lock (PDL)	Mini-Universal MATE-N-LOK	Sealed Mini-Universal MATE-N-LOK	Mini-Universal MATE-N-LOK 2	(MR) Miniature Rectangular	VAL-U-LOK Connector System	AMP-DUAC
Wire AWG —											
Maximum	20	20	18	18	16	16	18	16	18	18	18
Minimum	26	30	26	30	26	30	26	30	26	26	26
Current Rating —											
10 AWG Wire	—		—		—					—	—
14 AWG Wire	—	—	—	—	—	—	—	—	—	—	—
16 AWG Wire	—		—		14					—	—
18 AWG Wire	—	**	7	17	—	9	9	10.5	6	9	9
20 AWG Wire	3		—		—					—	—
Max. Operating Voltage (AC or DC)	50	250	300	250	300	600	600	600	250	600	600
Flammability Rating —											
UL 94V-0	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes
UL 94V-2	No	No	No	Yes	No	Yes*	No	Yes	No	Yes	Yes
Approvals —											
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Submitted	Yes	Yes	Yes
VDE	Yes	Yes	—	No	Yes	Yes	Yes	Submitted	No	—	No
Contact Material —											
Brass	No	Yes	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	—
Phos. Bronze	Yes	Yes	No	Yes	No	Yes	Yes	No	Yes	Yes	Yes
Plating Finish —											
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	No	Yes	No	Yes	Yes	Yes	Yes	Yes	Yes
Centerline Spacing —	.098 [2.50]	.118 [3.00]	.137 [3.50]	.145 [3.68]	.156 [3.96] 256 [6.50] .312 [7.92] .512 [13.00]	.163 [4.14]	.163 [4.14]	.163 [4.14]	.165 [4.20]	.165 [4.20]	.165 [4.20]
Housings —											
Panel Mount	No	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes
Free-Hanging	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	Yes	No	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	Yes	No	No	No	No	No	No	Yes	No	No	Yes
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	No	Yes	Yes	Yes	Yes
Dual Row Config.	No	Yes	Yes	No	Yes	Yes	Yes	Yes	No	Yes	Yes
Matrix Config.	No	No	No	Yes	Yes	Yes	No	Yes	Yes	No	No
Accessories —											
Strain Relief	No	No	Yes	No	Yes	Yes	No	No	Yes	No	Yes
Keying Plug	No	No	No	No	No	Yes	Yes	Yes	Yes	No	No
Seals	No	No	No	No	No	Yes	Yes	No	No	No	No
Headers —											
Vertical	Yes	Yes	No	No	Yes	Yes	Yes	Mini-Universal MATE-N-LOK	Yes	Yes	Yes
Blindmate	No	No	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	No
Right-Angle	Planned	Yes	No	No	No	Yes	Yes	Mini-Universal MATE-N-LOK	No	Yes	Yes
Positions —											
Minimum	2	2	2	1	1	1	2	2	2	2	2
Maximum	13	24	6	9	12	24	10	24	36	24	24

* Wire-to-Wire Only.
** 5 A on 20 AWG*

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Product Feature Comparisons (Continued)

Standard Density	5.0 mm Power Key Connectors (PKC)	.093 Commercial Pin & Socket	Commercial MATE-N-LOK	.140 MATE-N-LOK	Universal MATE-N-LOK	Universal MATE-N-LOK II	.156 MATE-N-LOK
Wire AWG—							
Maximum	16	14	14	10	10	10	10
Minimum	24	24	30	20	30	30	20
Current Rating —							
10 AWG Wire	—			28			32.5
14 AWG Wire	—	19	13	—	15	19	—
16 AWG Wire	10			—			—
18 AWG Wire	—	—	—	—	—	—	—
20 AWG Wire	—			—			—
Max. Operating Voltage (AC or DC)	300	250	250	600	600	600	600
Flammability Rating —							
UL 94V-0	Yes	No	Yes	No	Yes	Yes	No
UL 94V-2	No	Yes	Yes	Yes	Yes	No	Yes
Approvals —							
UL	Yes	Yes	Yes	Yes	Yes	Yes	Yes
CSA	Yes	Yes	Yes	Yes	Yes	Yes	No
VDE	No	No	No	No	Yes	Yes	No
Contact Material —							
Brass	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Phos. Bronze	No	Yes	Yes	Yes	Yes	Yes	No
Plating Finish —							
Tin Plating	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Gold Plating	No	Yes	Yes	No	Yes	Yes	No
Centerline Spacing —	.197 [5.00]	.198 [5.03] .250 [6.35] .248 [6.30]	.200 [5.08] .240 [6.10] x .202 [5.13] .195 [4.95] x .360 [9.14]	.240 [6.10]	.250 [6.35]	.250 [6.35]	.390 [9.91]
Housings —							
Panel Mount	No	Yes	Yes	Yes	Yes	Yes	Yes
Free-Hanging	No	Yes	Yes	Yes	Yes	Yes	Yes
Secondary Locking Latches	Yes	No	No	Yes	No	Yes	Yes
Contact Position Control	No	No	No	No	No	Yes	No
In-Line Config.	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Dual Row Config.	Yes	No	Yes	No	No	No	No
Matrix Config.	No	Yes	Yes	Yes	Yes	Yes	No
Accessories —							
Strain Relief	Yes	No	No	No	Yes	Universal MATE-N-LOK	No
Keying Plug	No	No	Yes	No	Yes	Yes	No
Seals	No	No	No	No	Yes	No	No
Headers —							
Vertical	Yes	No	Yes	No	Yes	Universal MATE-N-LOK	No
Blindmate	No	No	No	No	No	No	No
Right-Angle	No	No	Yes	No	Yes	Universal MATE-N-LOK	No
Positions —							
Minimum	2	1	1	2	1	2	3
Maximum	6	15	16	9	15	15	4

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Non-Compliant to RoHS Compliant Part Number Cross Reference

Non-Compliant Part Number	RoHS Compliant Part Number
350209-2	1586512-2
350210-2	1586514-2
350211-2	1586515-2
350211-3	1586515-3
350212-2	1586518-2
350213-2	1586520-2
350214-2	1586522-2
350220-2	1586524-2
1-350375-0	2-350375-0
1-350376-0	2-350376-0
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640584-2	640584-3
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770251-4	1-770251-0
770252-2	1-770252-0
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770255-2	1-770255-0
770262-2	770262-3
770328-1	1586627-1
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770621-2	1-770621-1
770743-1	1-770743-0
770743-2	1-770743-1
770834-3	1-770834-0
770834-6	1-770834-1
770835-3	1-770835-0
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770859-2	1-770859-1
770872-1	1-770872-0
770872-2	1-770872-1
770873-1	1-770873-0
770873-2	1-770873-1
770874-2	1-770874-1
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794074-1	1-794074-0
794074-2	1-794074-1
794075-2	1-794075-1
794076-1	1-794076-0
794076-2	1-794076-1
794077-1	1-794077-0
794077-2	1-794077-1
794078-1	1-794078-0

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

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

Non-Compliant Part Number	RoHS Compliant Part Number
794078-2	1-794078-1
794079-1	1-794079-0
794079-2	1-794079-1
794105-1	1-794105-0
794105-2	1-794105-1
794106-1	1-794106-0
794106-2	1-794106-1
794107-1	1-794107-0
794107-2	1-794107-1
794108-1	1-794108-0
794108-2	1-794108-1
794126-1	1-794126-0
794130-2	1-794130-1
794136-3	1-794136-1
794137-3	1-794137-1
794138-3	1-794138-3
794139-3	1-794139-3
794140-3	1-794140-3
794141-3	1-794141-3
794142-3	1-794142-3
794143-3	1-794143-3
794181-1	1-794181-1
794181-2	1-794181-2
794216-3	1-794216-0
794217-3	1-794217-0
794218-3	1-794218-0
794219-3	1-794219-0
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794222-3	1-794222-0
794223-3	1-794223-0
794224-3	1-794224-0
794225-3	1-794225-0
794226-3	1-794226-0
794227-3	1-794227-0
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794312-2	1-794312-2
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794313-2	794313-4
794325-1	1-794325-0
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794328-1	1-794328-0
794330-2	1-794330-1
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794359-2	1-794359-2
794360-1	1-794360-1
794360-2	1-794360-2
794374-1	1-794374-0
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1-794618-8	4-794618-8
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794620-6	3-794620-6
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1-794620-8	4-794620-8
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794621-4	3-794621-4
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794621-8	3-794621-8
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1-794621-8	4-794621-8
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794622-2	3-794622-2
794622-4	3-794622-4
794622-6	3-794622-6

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

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

Non-Compliant Part Number	RoHS Compliant Part Number
794622-8	3-794622-8
1-794622-0	4-794622-0
1-794622-2	4-794622-2
1-794622-4	4-794622-4
1-794622-6	4-794622-6
1-794622-8	4-794622-8
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2-794622-2	5-794622-2
2-794622-4	5-794622-4
794623-2	3-794623-2
794623-4	3-794623-4
794623-6	3-794623-6
794623-8	3-794623-8
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1-794623-2	4-794623-2
1-794623-4	4-794623-4
1-794623-6	4-794623-6
1-794623-8	4-794623-8
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794624-2	3-794624-2
794624-4	3-794624-4
794624-6	3-794624-6
794624-8	3-794624-8
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1-794624-2	4-794624-2
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1-794624-6	4-794624-6
1-794624-8	4-794624-8
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2-794624-4	5-794624-4
794625-2	3-794625-2
794625-4	3-794625-4
794625-6	3-794625-6
794625-8	3-794625-8
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1-794625-2	4-794625-2
1-794625-4	4-794625-4
1-794625-6	4-794625-6
1-794625-8	4-794625-8
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2-794625-2	5-794625-2
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794626-2	3-794626-2
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794626-6	3-794626-6
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794627-2	3-794627-2
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794627-6	3-794627-6
794627-8	3-794627-8
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2-794628-4	5-794628-4
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1-794630-4	4-794630-4
1-794630-6	4-794630-6
1-794630-8	4-794630-8
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1-794632-8	4-794632-8
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2-794632-4	5-794632-4
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794633-4	3-794633-4
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794633-8	3-794633-8
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1-794633-4	4-794633-4
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1-794633-8	4-794633-8
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1-794634-8	4-794634-8
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794635-8	3-794635-8
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794636-6	3-794636-6
794636-8	3-794636-8
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1-794636-2	4-794636-2
1-794636-4	4-794636-4
1-794636-6	4-794636-6
1-794636-8	4-794636-8
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2-794636-2	5-794636-2
2-794636-4	5-794636-4
794637-2	3-794637-2
794637-4	3-794637-4
794637-6	3-794637-6
794637-8	3-794637-8
1-794637-0	4-794637-0
1-794637-2	4-794637-2
1-794637-4	4-794637-4
1-794637-6	4-794637-6
1-794637-8	4-794637-8
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2-794637-2	5-794637-2
2-794637-4	5-794637-4
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1-794638-4	4-794638-4
1-794638-6	4-794638-6
1-794638-8	4-794638-8
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2-794638-2	5-794638-2
2-794638-4	5-794638-4
794662-2	1586489-2
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794662-8	1586489-8
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1-794662-4	1-1586489-4
1-794662-6	1-1586489-6
1-794662-8	1-1586489-8
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2-794662-4	2-1586489-4
794663-2	1586490-2
794663-4	1586490-4
794663-6	1586490-6
794663-8	1586490-8
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1-794663-2	1-1586490-2
1-794663-4	1-1586490-4
1-794663-6	1-1586490-6
1-794663-8	1-1586490-8
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2-794663-2	2-1586490-2
2-794663-4	2-1586490-4
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794664-4	1586491-4
794664-6	1586491-6
794664-8	1586491-8
1-794664-0	1-1586491-0
1-794664-2	1-1586491-2
1-794664-4	1-1586491-4
1-794664-6	1-1586491-6
1-794664-8	1-1586491-8
2-794664-0	2-1586491-0
2-794664-2	2-1586491-2
2-794664-4	2-1586491-4
794665-2	1586492-2
794665-4	1586492-4
794665-6	1586492-6
794665-8	1586492-8
1-794665-0	1-1586492-0
1-794665-2	1-1586492-2
1-794665-4	1-1586492-4

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
UK: 44-8706-080-208

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

Non-Compliant Part Number	RoHS Compliant Part Number
1-794665-8	1-1586492-8
2-794665-0	2-1586492-0
2-794665-2	2-1586492-2
2-794665-4	2-1586492-4
794666-2	1586493-2
794666-4	1586493-4
794666-6	1586493-6
794666-8	1586493-8
1-794666-0	1-1586493-0
1-794666-2	1-1586493-2
1-794666-4	1-1586493-4
1-794666-6	1-1586493-6
1-794666-8	1-1586493-8
2-794666-0	2-1586493-0
2-794666-2	2-1586493-2
2-794666-4	2-1586493-4
794667-2	1586494-2
794667-4	1586494-4
794667-6	1586494-6
794667-8	1586494-8
1-794667-0	1-1586494-0
1-794667-2	1-1586494-2
1-794667-4	1-1586494-4
1-794667-6	1-1586494-6
1-794667-8	1-1586494-8
2-794667-0	2-1586494-0
2-794667-2	2-1586494-2
2-794667-4	2-1586494-4
794668-2	1586495-2
794668-4	1586495-4
794668-6	1586495-6
794668-8	1586495-8
1-794668-0	1-1586495-0
1-794668-2	1-1586495-2
1-794668-4	1-1586495-4
1-794668-6	1-1586495-6
1-794668-8	1-1586495-8
2-794668-0	2-1586495-0
2-794668-2	2-1586495-2
2-794668-4	2-1586495-4
794669-2	1586496-2
794669-4	1586496-4
794669-6	1586496-6
794669-8	1586496-8
1-794669-0	1-1586496-0
1-794669-2	1-1586496-2
1-794669-4	1-1586496-4
1-794669-6	1-1586496-6
1-794669-8	1-1586496-8
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2-794669-2	2-1586496-2
2-794669-4	2-1586496-4
794677-2	3-794677-2
794677-4	3-794677-4
794677-6	3-794677-6
794677-8	3-794677-8
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1-794677-2	4-794677-2
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1-794677-6	4-794677-6
1-794677-8	4-794677-8
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2-794677-2	5-794677-2
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794678-2	3-794678-2
794678-4	3-794678-4
794678-6	3-794678-6
794678-8	3-794678-8
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1-794678-2	4-794678-2
1-794678-4	4-794678-4
1-794678-6	4-794678-6
1-794678-8	4-794678-8
2-794678-0	5-794678-0
2-794678-2	5-794678-2
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794679-2	3-794679-2
794679-4	3-794679-4
794679-6	3-794679-6
794679-8	3-794679-8
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1-794679-2	4-794679-2
1-794679-4	4-794679-4
1-794679-6	4-794679-6
1-794679-8	4-794679-8
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794680-2	3-794680-2
794680-4	3-794680-4
794680-6	3-794680-6
794680-8	3-794680-8
1-794680-0	4-794680-0
1-794680-2	4-794680-2
1-794680-4	4-794680-4
1-794680-6	4-794680-6
1-794680-8	4-794680-8
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2-794680-2	5-794680-2
2-794680-4	5-794680-4
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794681-4	3-794681-4
794681-6	3-794681-6
794681-8	3-794681-8
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794682-2	3-794682-2
794682-4	3-794682-4
794682-6	3-794682-6
794682-8	3-794682-8
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1-794682-4	4-794682-4
1-794682-6	4-794682-6
1-794682-8	4-794682-8
2-794682-0	5-794682-0
2-794682-2	5-794682-2
2-794682-4	5-794682-4
794704-1	1586542-1
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1445050-7	2-1445050-7
1445050-8	2-1445050-8
1445050-9	2-1445050-9
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1445051-2	2-1445051-2
1445051-3	2-1445051-3
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1445051-7	2-1445051-7
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1445051-9	2-1445051-9
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1445054-9	2-1445054-9
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1445055-7	2-1445055-7
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1445057-7	2-1445057-7
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1445084-7	2-1445084-7
1445084-8	2-1445084-8
1445084-9	2-1445084-9
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1445085-3	2-1445085-3
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1445085-7	2-1445085-7
1445085-8	2-1445085-8
1445085-9	2-1445085-9
1-1445085-0	3-1445085-0

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
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C. America: 52-55-1106-0803
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Non-Compliant to RoHS Compliant Part Number Cross Reference (Continued)

Non-Compliant Part Number	RoHS Compliant Part Number
1-1445085-1	3-1445085-1
1-1445085-2	3-1445085-2
1445086-2	2-1445086-2
1445086-3	2-1445086-3
1445086-4	2-1445086-4
1445086-5	2-1445086-5
1445086-6	2-1445086-6
1445086-7	2-1445086-7
1445086-8	2-1445086-8
1445086-9	2-1445086-9
1-1445086-0	3-1445086-0
1-1445086-1	3-1445086-1
1-1445086-2	3-1445086-2
1445087-2	2-1445087-2
1445087-3	2-1445087-3
1445087-4	2-1445087-4
1445087-5	2-1445087-5
1445087-6	2-1445087-6
1445087-7	2-1445087-7
1445087-8	2-1445087-8
1445087-9	2-1445087-9
1-1445087-0	3-1445087-0
1-1445087-1	3-1445087-1
1-1445087-2	3-1445087-2
1445088-2	2-1445088-2
1445088-3	2-1445088-3
1445088-4	2-1445088-4
1445088-5	2-1445088-5
1445088-6	2-1445088-6
1445088-7	2-1445088-7
1445088-8	2-1445088-8
1445088-9	2-1445088-9
1-1445088-0	3-1445088-0
1-1445088-1	3-1445088-1
1-1445088-2	3-1445088-2
1445089-2	2-1445089-2
1445089-3	2-1445089-3
1445089-4	2-1445089-4
1445089-5	2-1445089-5
1445089-6	2-1445089-6
1445089-7	2-1445089-7
1445089-8	2-1445089-8
1445089-9	2-1445089-9
1-1445089-0	3-1445089-0
1-1445089-1	3-1445089-1
1-1445089-2	3-1445089-2
1445090-2	2-1445090-2
1445090-3	2-1445090-3
1445090-4	2-1445090-4
1445090-5	2-1445090-5
1445090-6	2-1445090-6
1445090-7	2-1445090-7
1445090-8	2-1445090-8
1445090-9	2-1445090-9
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1-1445090-2	3-1445090-2
1445091-2	2-1445091-2
1445091-3	2-1445091-3
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1445091-5	2-1445091-5
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1445091-7	2-1445091-7
1445091-8	2-1445091-8
1445091-9	2-1445091-9
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Japan: 81-44-844-8013
UK: 44-8706-080-208

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Engineering Notes

Catalog 82181
Revised 4-08

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Dimensions are in inches and millimeters unless otherwise specified. Values in brackets are metric equivalents.

Dimensions are shown for reference purposes only. Specifications subject to change.

USA: 1-800-522-6752
Canada: 1-905-470-4425
Mexico: 01-800-733-8926
C. America: 52-55-1106-0803

South America: 55-11-2103-6000
Hong Kong: 852-2735-1628
Japan: 81-44-844-8013
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Americas

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Fax: +54-11-4733-2211

Brasil – São Paulo
Phone: +55-11-3611-1311
Fax: +55-11-3611-0397

Canada – Toronto
Phone: +905-475-6222
Fax: +905-474-5520
Product Information Center: (Technical Support)
Phone: +905-470-4425
Fax: +905-474-5525

Colombia – Bogota
Phone: +57-1-231-9398
Fax: +57-1-660-0206

Mexico – Mexico City
Phone: +52-55-1106-0800
+01-800-733-8926
Fax: +52-55-1106-0901

United States – Harrisburg, PA
Phone: +717-564-0100
Fax: +717-986-7575
Product Information Center: (Technical Support)
Phone: +800-522-6752
Fax: +717-986-7575

For Latin/South American Countries not shown
Phone: +54-11-4733-2015
Fax: +54-11-4733-2083

Asia/Pacific

Australia – Sydney
Phone: +61-2-9554-2600
Fax: +61-2-9502-2556
Product Information Center: (Technical Support)
Phone: +61-2-9840-8200
Fax: +61-2-9634-6188

India – Bangalore
Phone: +91-80-285-40800
Fax: +91-80-285-40820

Indonesia – Jakarta
Phone: +65-6482-0311
Fax: +65-6482-1012

Japan – Toyko
Phone: +81-44-844-8111
Fax: +81-44-812-3207
Product Information Center: (Technical Support)
Phone: +81-44-844-8013
Fax: +81-44-812-3200

Korea – Seoul
Phone: +82-2-3415-4500
Fax: +82-2-3486-3810

Malaysia – Kuala Lumpur
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Fax: +60-3-78053066

New Zealand – Auckland
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Fax: +64-9-634-4586

Philippines – Makati City
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Fax: +632-867-8661

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Fax: +852-2735-0243

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Fax: +86-21-2407-1599

Taiwan – Taipei
Phone: +886-2-8768-2788
Fax: +886-2-8768-2268

Singapore – Singapore
Phone: +65-6482-0311
Fax: +65-6482-1012

Thailand – Bangkok
Phone: +66-2-955-0500
Fax: +66-2-955-0505

Vietnam and Indochina –
Ho Chi Minh City
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Fax: +84-8 930-3443

Europe/Middle East/Africa

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Phone: +43-1 90 5 60-0
Fax: +43-1 90 5 60-1333

Belgium – Kessel-Lo
Phone: +32-16-35-23-00
Fax: +32-16-35-23-52

Bulgaria – Sofia
Phone: +359-2-971-2152
Fax: +359-2-971-2153

Czech Republic – Kurim
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Fax: +420-5-41-162-223

Denmark – Glostrup
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Fax: +45-43-441-414

Egypt – Cairo
Phone: +20-2-29 04 281
Fax: +20-2-41 92 334

Estonia – Tartu
Phone: +372-5138-274
Fax: +372-7400-779

Finland – Helsinki
Phone: +358-95-12-34-20
Fax: +358-95-12-34-250

France – Cergy-Pontoise
Phone: +33-1-3420-8888
Fax: +33-1-3420-8600
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Phone: +33-1-3420-8943
Fax: +33-1-3420-8623

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Phone: +49-6251-133-0
Fax: +49-6251-133-1600
Product Information Center: (Technical Support)
Phone: +49-6251-133-1999
Fax: +49-6251-133-1988

Germany – Langen
Phone: +49-6103-709-0
Fax: +49-6103-709-1223

Germany – Speyer
Phone: +49-6232-30-0
Fax: +49-6232-30-2243

Germany - HTS Division – Neunkirchen
Phone: +49-2247-305-0
Fax: +49-2247-305-122

Greece – Athens
Phone: +30-210-9370-396/397
Fax: +30-210-9370-655

Hungary – Budapest
Phone: +36-1-289-1000
Fax: +36-1-289-1010

Ireland – Dublin
Phone: +353-1-820-3000
Fax: +353-1-820-9790

Israel – Yokneam
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Fax: +972-4-959-0506

Italy – Collegno (Torino)
Phone: +39-011-4012-111
Fax: +39-011-4031116

Lithuania – Vilnius
Phone: +370-5-2131-402
Fax: +370-5-2131-403

Netherlands – 's-Hertogenbosch
Phone: +31-73-624-62-46
Fax: +31-73-621-23-65
Product Information Center: (Technical Support)
Phone: +31-73-6246-999
Fax: +31-73-6246-998

Norway – Nesbru
Phone: +47-66-77-8886
Fax: +47-66-77-8855

Poland – Warsaw
Phone: +48-22-45-76-700
Fax: +48-22-45-76-720

Romania – Bucharest
Phone: +40-21-311-3479/3596
Fax: +40-21-312-0574

Russia – Moscow
Phone: +7-495-926-5506/07/08/09
Fax: +7-495-926-5505

Russia – St. Petersburg
Phone: +7-812-718-8192
Fax: +7-812-718-8193

Slovenia – Ljubljana
Phone: +386-1561-3270
Fax: +386-1561-3240

South Africa – Port Elizabeth
Phone: +2741-503-4500
Fax: +2741-581-0440

Spain – Barcelona
Phone: +34-93-291-0330
Fax: +34-93-201-7879
Product Information Center: (Technical Support):
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Fax: +34-93-200-3779

Sweden – Upplands Väsby
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Fax: +46-8-50-72-50-01

Switzerland – Steinach
Phone: +41-71-447-0447
Fax: +41-71-447-0444

Turkey – Istanbul
Phone: +90-212-281-8181/2/3
Fax: +90-212-281-8184

Ukraine – Kiev
Phone: +380-044-206-2265
Fax: +380-044-206-2264

United Kingdom – Swindon
Phone: +44-8706-080-208
Fax: +44-1793-572-516
Product Information Center: (Technical Support)
Freephone GB: 0800-267-666
Phone: +44-8706-080-208
Fax: +44-208-420-8081

For Middle East/African Countries Not Shown
Phone: +33-1-3420-8866
Fax: +33-1-3420-8300

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