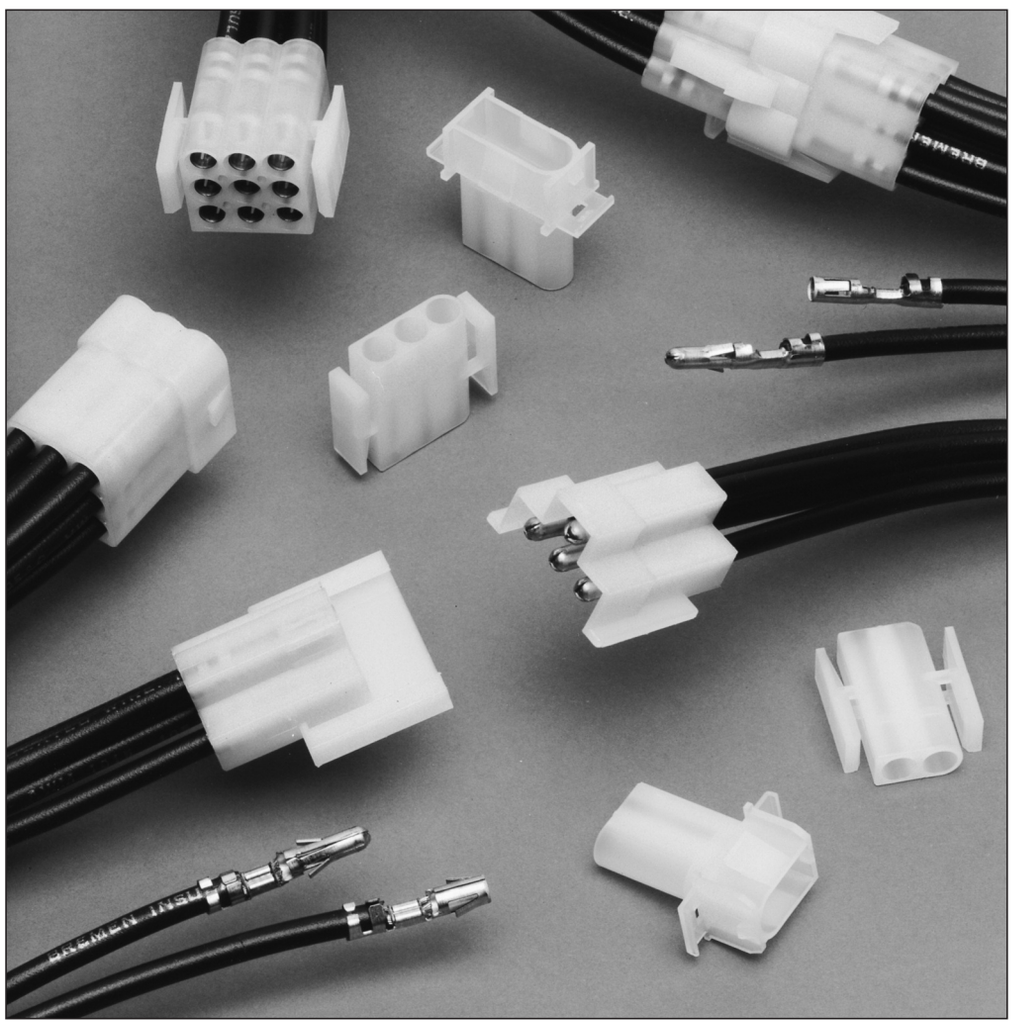
Introduction

Product Facts

- Available in 2, 3 and 9 circuit configurations for panel mounting; 4, 9 and 18 circuit configurations for free-hanging applications.
- Standard natural colored polyamide housings.
- Housings fully polarized.
- Contacts fully protected in housings.
- Contacts accept wire size range 0.5–5.0 mm^2 (20–10 AWG) with insulation diameters from 2.5 to 4.6 mm.
- Dual locking lances assure optimum contact stability.
- Extraction tool removes both pins and sockets.
- Contacts are on 6.09 mm 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 A.



The UL recognized .140 MATE-N-LOK connectors with 3.5 mm diameter pins and sockets, have a 25 A current carrying capacity and are capable of accepting wire with insulation diameters up to 4.5 mm. Both pins and sockets are equipped with dual locking lances, which assure positive contact retention when installed in the housings.

The seam of the socket is S-shaped, which allows an easy mating and unmating of the contacts. Special contacts of copper-laminated steel and high temperature-resistant housing (up to 105 °C) are used in applications with high temperatures and high currents for example ovens.

This versatile family of TE Connectivity connectors offers a wide selection of sizes and configurations.

A few of the many available versions include connectors for free-hanging applications, special versions including those for mixed loading, which have been used in the automotive industry for years.

Technical Data

Technical Features

The .140 (3.5 mm) MATE-N-LOK Connector performance characteristics are based on free-hanging and panel mount connectors, loaded with contacts crimped on stranded wire.

Dielectric Withstanding Voltage:
3.0 kV AC between adjacent circuits

Insulation Resistance:
1000 megohms minimum initial between adjacent circuits

Voltage Rating:
250 V AC or DC

Connector Mating:
20 N max. per circuit

Connector Unmating:
3.6 N min. per circuit

Contact Retention:
133.5 N min.

Durability:
25 cycles max.,
mating and unmating

Temperature Range:
–55 °C to +105 °C

Thermal Shock:
–55 °C to +85 °C

Temperature-Humidity Cycling:
+25 °C to +65 °C at 95 %
Relative Humidity

Technical Documents

Product Specification:
108-1032 for Connectors

Application Specification:
114-1007 for Contacts

Performance Characteristics

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 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 Data (continued)

Current Rating Verification for 30 °C max. Temperature Rise, 100% Energized

Wire-to-Wire

.140 MATE-N-LOK – Calculated Current Table (A)

No. of Circuits	Wire Size						
	(AWG)	10	12	14	16	18	20
	(mm^2)	5,0	3,0	2,0	1,2	0,8	0,5
2		28,0	23,0	18,5	15,0	13,5	10,5
3		25,0	21,0	17,0	13,5	12,0	9,5
9		18,5	15,0	12,0	10,0	9,0	7,0

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 Temperature Rise vs. Current Testing

Wire Size		Wire Length
(AWG)	(mm^2)	(mm)
20	0.5	200
18	0.8	240
16	1.2	290
14	2.0	350
12	3.0	420
10	5.0	490

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 Range		Termination Resistance		Contact Crimp Tensile Force (N) min.
(AWG)	(mm^2)	Test Current (A)	Resistance* (mΩ) (max. Init)	
20	0.5	4.5	3.0	89
18	0.8	6.0	2.5	133
16	1.2	8.0	2.5	200
14	2.0	10.00	2.0	222
12	3.0	12.00	1.5	267
10	5.0	14.00	1.5	289

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

Socket Contacts, 3.5 mm Diameter

Technical Features

Wire Size Range:
0.5 up to 5.3 mm^2

Insulation Diameter:
4.5 mm max.

Contact Material:
CuZn or CuSn

Contact Finish:
Pre-tin plated

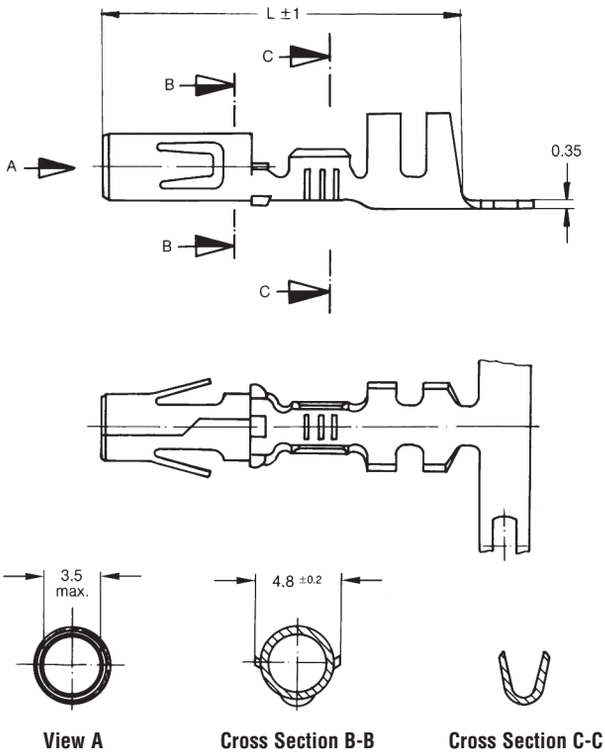
Current Carrying Capacity:
Up to 25 A per contact, depending on number of positions, wire size and ambient temperature

Temperature Range:
–55 °C to +105 °C

Product Specification:
108-1032

Application Specification:
114-1007

Extraction Tool:
Part No. **539764-1**



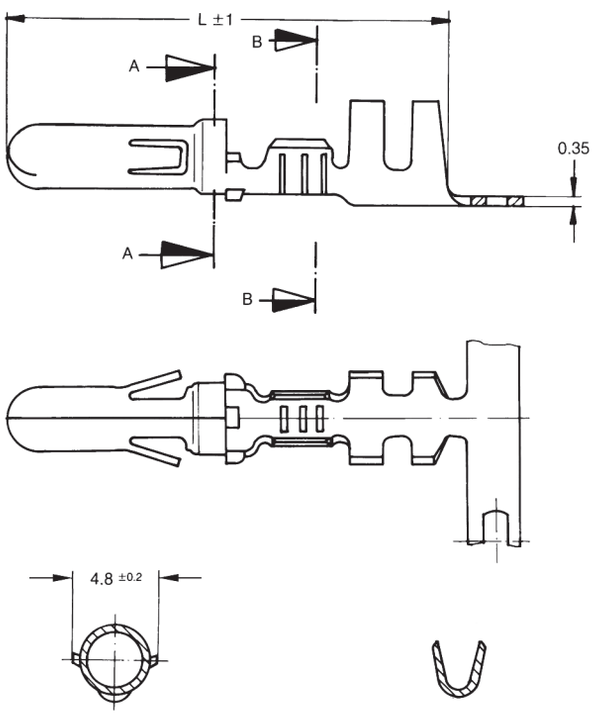
Socket Contacts

Wire Size Range (mm^2)	Insulation Diameter (mm)	Socket L (mm)	Material and Finish	Part Numbers					
				Strip Form	Package Quantity	Loose-Piece	Package Quantity	Applicator	Hand Tool
0.5–1.0	1.4–2.3	20.0	CuSn, pre-tin plated	927843-2	7,500	927844-2	2,500	1855490-x	2063577-1
	2.0–2.7	20.0	CuSn, pre-tin plated	927818-2	7,500	927819-2	500	680708-x	–
0.5–1.5	1.2–2.4	20.0	CuZn, pre-tin plated	926986-1	7,500	–	–	680331-x	2063535-1
			CuSn, pre-tin plated	926986-2	7,500	–	–		
0.5–2.1	2.5–4.5	20.0	CuZn, pre-tin plated	925714-1	7,500	925661-1	500	1385797-x	2063535-1
			CuSn, pre-tin plated	925714-2	7,500	925661-2	900		
		22.0	St4 K 50, CuSn	925932-5*	7,500	925933-5*	500	on request	–
		20.0	CuSn, silver plated	925851-2**	7,500	925866-2**	500	on request	–
>1.0–2.5	2.1–3.1	20.0	CuSn, pre-tin plated	927860-2	7,500	927861-2	1,000	677829-x	–
	2.7–4.0	20.0	CuSn, pre-tin plated	927875-2	7,500	–	–	680709-x	–
2.1–5.3	2.5–4.5	20.0	CuZn, pre-tin plated	925712-1	7,500	925663-1	500	680112-x	–
			CuSn, pre-tin plated	925712-2	7,500	925663-2	500		

*) For Ambient Temperatures up to +120 °C and 17 Ampere
**) Without Locking Lance

Pin Contacts, 3.5 mm Diameter

Pin Contacts, Mates with 3.5 mm Diameter Socket Contacts



Cross Section A-A

Cross Section B-B

Pin Contacts

Wire Size Range (mm^2)	Insulation Diameter (mm)	Socket L (mm)	Material and Finish	Part Numbers				Applicator	Hand Tool
				Strip Form	Package Quantity	Loose-Piece	Package Quantity		
0.5–1.0	1.4–2.3	25.0	CuSn, pre-tin plated	927841-2	7,500	927842-2	2,000	1855490-x	2063577-1
0.5–1.5	1.2–2.4	25.0	CuZn, pre-tin plated	926988-1	7,500	926989-1	2,000	680331-x	2063535-1
			CuSn, pre-tin plated	926988-2	7,500	926989-2	2,000		
0.5–2.1	2.5–4.5	25.0	CuZn, pre-tin plated	925715-1	7,500	925660-1	500	1385797-x	2063535-1
			CuSn, pre-tin plated	925715-2	7,500	925660-2	500		
		25.0	St4 K 50, pre-tin plated	925715-5*	7,500	925660-5*	500		
		26.6	St4 K 50, pre-tin plated	925960-1**	7,500	925961-1**	500	on request	–
>1.0–2.5	2.1–3.1	25.0	CuSn, pre-tin plated	927858-2	7,500	927859-2	500	677829-x	–
	2.7–4.0	25.0	CuSn, pre-tin plated	927873-2	10,000	927874-2	500	680709-x	–
2.1–5.3	2.5–4.5	25.0	CuZn, pre-tin plated	925713-1	7,500	925662-1	500	680112-x	–
			CuSn, pre-tin plated	925713-2	7,500	925662-2	500		

*) For Ambient Temperatures up to +120 °C and 17 Ampere
**) Without Locking Lance

Socket (Plug) Housings

Technical Features

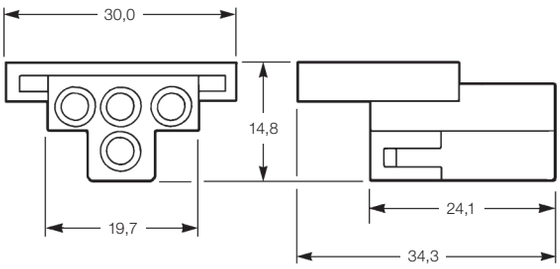
No. of Positions:
4 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



4 Position Socket (Plug) Housing

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
4	–	Natural	1-480510-0	1,000	1-480512-0

Technical Features

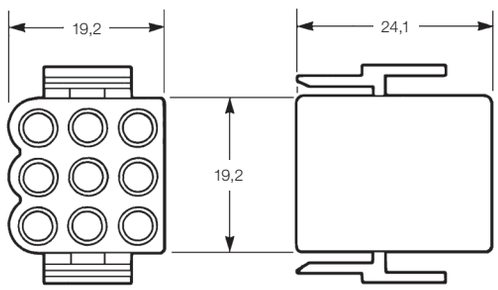
No. of Positions:
9 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



9 Position Socket (Plug) Housing, Matrix

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
9	–	Natural	1-480585-0	100	1-480586-0

Socket (Plug) Housings, In-Line

Technical Features

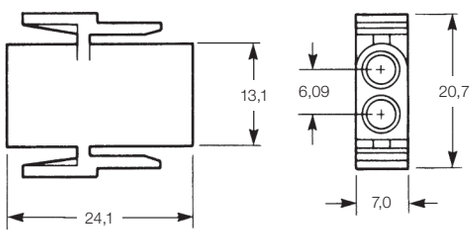
No. of Positions:
2 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



2 Position Socket (Plug) Housing, In-Line

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
2	–	Natural	1-350344-0	100	1-350345-0

Technical Features

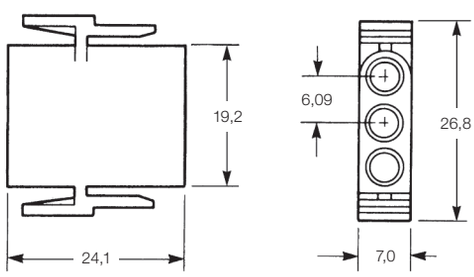
No. of Positions:
3 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



3 Position Socket (Plug) Housing, In-Line

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
3	–	Natural	1-350346-0	6,400	1-350347-0

Socket (Plug) Housings, Matrix

Technical Features

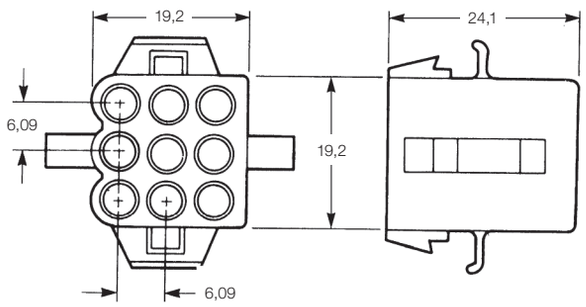
No. of Positions:
9 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



9 Position Socket (Plug) Housing, Matrix

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
2	–	Natural	1-480672-0*	1,200	1-480673-0

*) Other colors on request

Technical Features

No. of Positions:
18 Positions

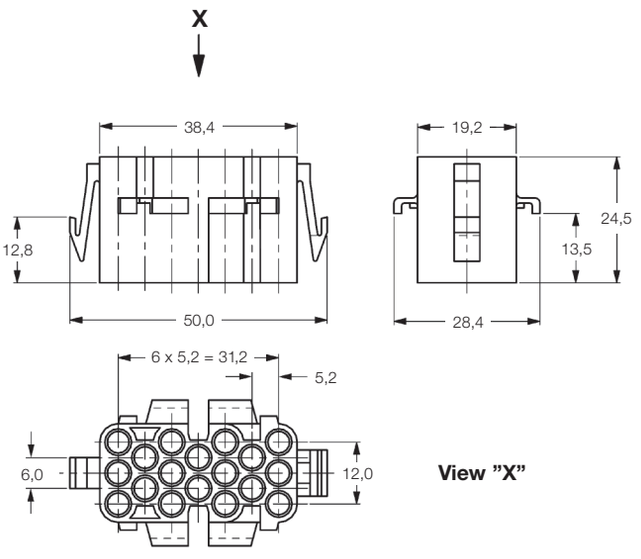
Housing Material:
PA66

Flammability Rating:
UL 94 V-2 rated

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



18 Position Socket (Plug) Housing

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Socket (Plug) Housing	Package Quantity	Mating Pin (Cap) Housing
18	–	Natural	925451-1	200	925450-1

Pin (Cap) Housings

Technical Features

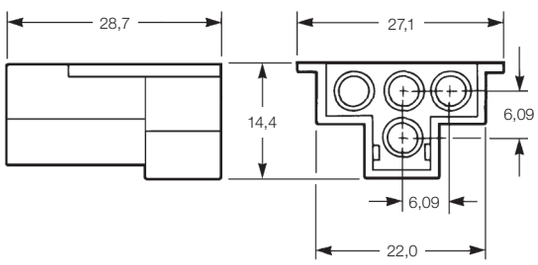
No. of Positions:
4 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



4 Position Pin (Cap) Housing

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
4	–	Natural	1-480512-0	1,000	1-480510-0

Technical Features

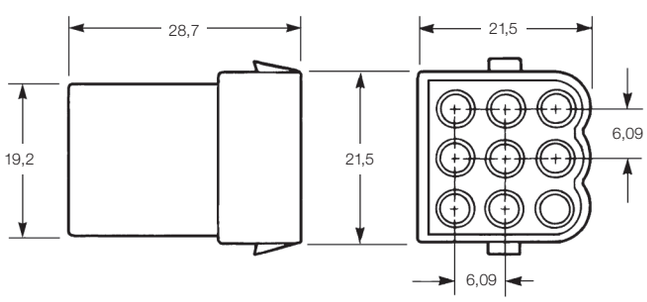
No. of Positions:
9 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



9 Position Pin (Cap) Housing, Matrix

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
9	–	Natural	1-480586-0	100	1-480585-0

Pin (Cap) Housings, In-Line

Technical Features

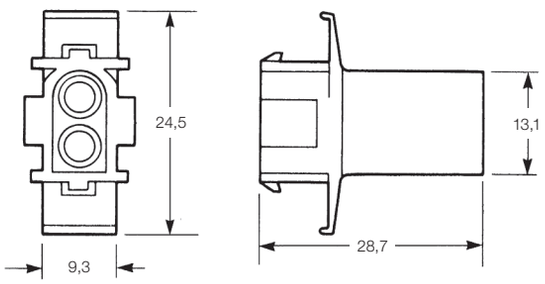
No. of Positions:
2 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



2 Position Pin (Cap) Housing, In-Line

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
2	–	Natural	1-350345-0	100	1-350344-0

Technical Features

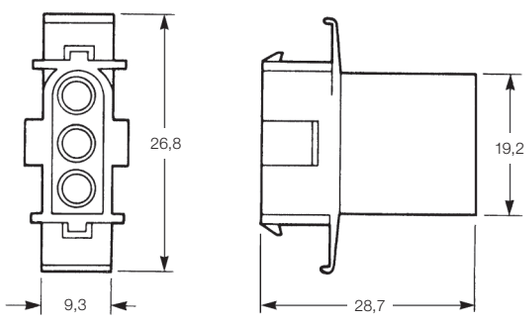
No. of Positions:
3 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm^2 (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



3 Position Pin (Cap) Housing, In-Line

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
3	–	Natural	1-350347-0	100	1-350346-0

Pin (Cap) Housings, Matrix

Technical Features

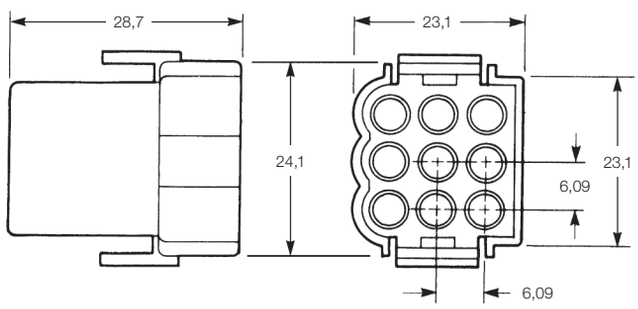
No. of Positions:
9 Positions

Housing Material:
Nylon

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



9 Position Pin (Cap) Housing, Matrix

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
9	–	Natural	1-480673-0	1,200	1-480672-0

Technical Features

No. of Positions:
18 Positions

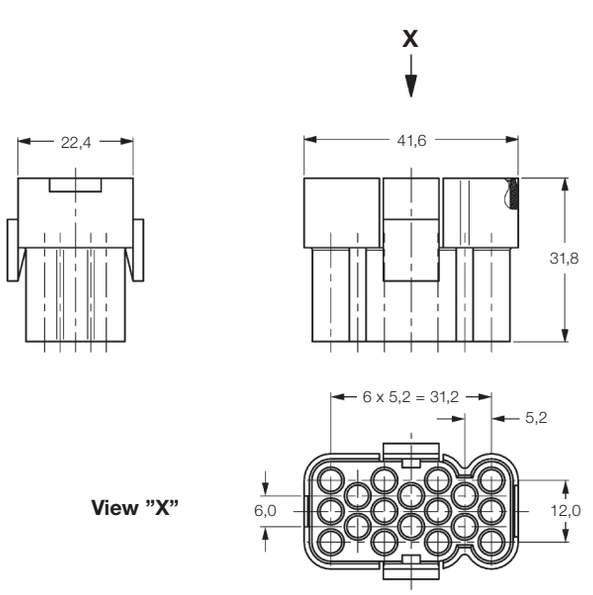
Housing Material:
PA66

Flammability Rating:
UL 94 V-2 rated

Wire Size Range:
0.5–5.0 mm² (20–12 AWG)

Product Specification:
108-1032

Application Specification:
114-1007



18 Position Pin (Cap) Housing

No. of Positions	Keying Options	Housing Color	Part Numbers		
			Pin (Cap) Housing	Package Quantity	Mating Socket (Plug) Housing
18	–	Natural	925450-1	200	925451-1

Engineering Notes