.163" Centerline, 600 V, 9.5 A max. (Mini Universal MATE-N-LOK) - Current Rating Verification

Performance Characteristics

Maximum Current: Maximum current rating of Mini-Universal 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.

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

Housing Panel Retention:
26 lb. min.
Housing Lock Strength:
6 lb. min.
Thermal Shock:

-20° C to +105° C

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

Corrosion:
48 hr. at 5% salt concentration

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

Physical Shock:
18 drops, 50 g halfsine at 11 milliseconds

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

Wire-to-Wire
Mini-UMNL Calculated Current Table

Number of Circuits	Wire Gauge						
	16	18	20	22	24	26	30
2	9.50	9.00	7.50	6.00	5.00	4.00	3.00
3	8.50	8.00	7.00	5.50	4.50	4.00	3.00
4	8.00	7.00	6.00	5.00	4.50	3.50	2.50
6	7.00	6.50	5.50	4.50	4.00	3.00	2.50
9	6.00	5.50	4.50	4.00	3.50	3.00	2.00
12	6.00	5.50	4.50	3.50	3.00	2.50	2.00
15	5.50	5.00	4.00	3.50	3.00	2.50	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.

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 values 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	mm^2	Test Current (Amps)	Resistance Milliohms (Max)	Force (Min.)	
				lbs.	N
30	.05	-	-	-	-
28	.08	-	-	-	-
26	.12	-	-	4	18
24	.2	-	-	7	31
22	.3	-	-	11	49
20	.5	-	-	13	58
18	.8	-	-	15	67
16	1.2	-	-	18	80

Technical Documents

Product Specifications

108-1542 -- Mini-Universal MATE-N-LOK Connectors
108-1543 -- Mini-Universal MATE-N-LOK Headers
108-5151 -- Mini-Universal MATE-N-LOK Connectors (UL 94V-2)
108-5138 -- Mini-Universal MATE-N-LOK Connectors (UL 94V-0)
(You can search for the above documents using the Document Search option in the left hand navigation of this page.)