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ELECTRONICS

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Jameco Part Number 736747

Offset pin entry holes provide 180° polarization

Accepts entire line of .156" contacts

Optional voids available

#### **Reference Information**

**Product Specification: PS-08-50** 

Packaging: Bag UL File No.: E29179 CSA File No.: LR19980

Mates With: Molex KK 3.96mm (.156") pitch headers or

1.14mm (.045") pins

Use With: 2478, 2578, 6438, 6838, 7258 and

8818 terminals Designed In: Inches

#### **Electrical**

Voltage: 250V AC max.

Current: Phosphor Bronze—7.0A max.

Brass—5.0A max.

Contact Resistance:  $6m\Omega$  max.

Dielectric Withstanding Voltage: 1500V AC Insulation Resistance: 500K  $\mbox{M}\Omega$  min.

#### Mechanical

Contact Insertion Force: 1.8kg (4 lb) max. Contact Retention to Housing: 3.6kg (8 lb) min. Mating Force: Square pin—2.25 lb max.

Round pin—1.60 lb max.

Unmating Force: Square pin—0.84 lb min.

Round pin—0.60 lb min. Normal Force: 0.75kg (1.65 lb) Durability: 25 cycles max.

#### **Physical**

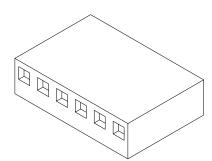
Housing: Polyester, UL 94V-0 Operating Temperature: 0 to +75°C



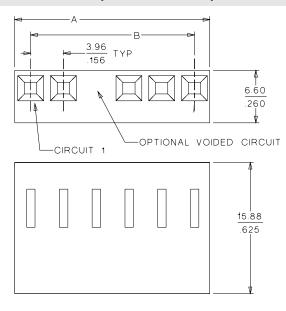
### **molex**° 3.96mm (.156") Pitch KK®

## **Crimp Terminal Housing**

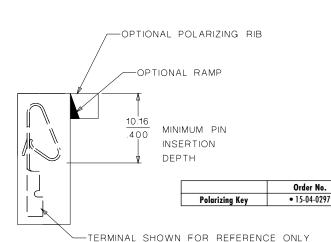
41695



#### **CATALOG DRAWING (FOR REFERENCE ONLY)**



Note: When mating polarizing rib version with breakaway friction lock header or polarizing wall series, the end friction lock or polarizing wall of header must be removed.



#### **ORDERING INFORMATION AND DIMENSIONS**

		Order No.		Dimension	
Circuits	With Locking Ramp and Polarizing Ribs	Without Locking Ramp or Polarizing Ribs	With Locking Ramp Only	A	В
2	• 09-50-8023	• 09-50-8020	• 09-50-8021	8.79 (.346)	3.96 (.156)
3	• 09-50-8033	• 09-50-8030	• 09-50-8031	12.75 (.502)	7.92 (.312)
4	• 09-50-8043	• 09-50-8040	• 09-50-8041	16.71 (.658)	11.89 (.468)
5	• 09-50-8053	• 09-50-8050	• 09-50-8051	20.67 (.814)	15.85 (.624)
6	• 09-50-8063	• 09-50-8060	• 09-50-8061	24.64 (.970)	19.81 (.780)
7	• 09-50-8073	• 09-50-8070	• 09-50-8071	28.60 (1.126)	23.77 (.936)
8	• 09-50-8083	• 09-50-8080	• 09-50-8081	32.56 (1.282)	27.74 (1.092)
9	• 09-50-8093	• 09-50-8090	• 09-50-8091	36.53 (1.438)	31.70 (1.248)
10	• 09-50-8103	• 09-50-8100	• 09-50-8101	40.49 (1.594)	35.66 (1.404)
11	• 09-50-8113	• 09-50-8110	• 09-50-8111	44.45 (1.750)	39.62 (1.560)

<sup>•</sup> US Standard Product, available through Molex franchised distributors

		Order No.			nsion
Circuits	With Locking Ramp and Polarizing Ribs	Without Locking Ramp or Polarizing Ribs	With Locking Ramp Only	A	В
12	• 09-50-8123	• 09-50-8120	• 09-50-8121	48.41 (1.906)	43.59 (1.716)
13	• 09-50-8133	• 09-50-8130	• 09-50-8131	52.37 (2.062)	47.55 (1.872)
14	• 09-50-8143	• 09-50-8140	• 09-50-8141	56.34 (2.218)	51.51 (2.028)
15	• 09-50-8153	• 09-50-8150	• 09-50-8151	60.30 (2.374)	55.47 (2.184)
16	• 09-50-8163	• 09-50-8160	• 09-50-8161	64.26 (2.530)	59.44 (2.340)
17	• 09-50-8173	• 09-50-8170	• 09-50-8171	68.22 (2.686)	63.40 (2.496)
18	• 09-50-8183	• 09-50-8180	• 09-50-8181	72.19 (2.842)	67.36 (2.652)
19	• 09-50-8193	• 09-50-8190	• 09-50-8191	76.15 (2.998)	71.32 (2.808)
20	• 09-50-8203	• 09-50-8200	• 09-50-8201	80.11 (3.154)	75.28 (2.964)

MX01 D-6

3.00 to 7.92mm (.118 to .312")



#### 1.0 SCOPE

This Product Specification covers the 3.96 mm (.156 inch) centerline (pitch) 1.14mm (.045) square pin headers when mated with either printed circuit board (PCB) connectors or connectors terminated with 18 to 26 AWG wire using crimp technology.

#### 2.0 PRODUCT DESCRIPTION

#### 2.1 PRODUCT NAME AND SERIES NUMBERS

Crimp Terminals: 2478,2578,2878,2477,

Crimp Housings: 2139, 41695 PCB Connectors: 2145, 41815

Headers: 41771, 41772, 41791, 41792, 42471, 42472, 42491, 42492, 41661, 41662, 41671,

61672, 41681, 41682

Other products conforming to this specification are noted on the individual drawings.

#### 2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

Terminal Material: Brass or Phos. Bronze (for Max performance use phos bronze material.)

Housing: Nylon or Polyester Pins: Brass or Phos. Bronze

For more information on dimensions, materials, and plating see the individual drawings.

#### 2.3 SAFETY AGENCY APPROVALS

UL File Number ...... E29179 CSA .....LR19980

#### 3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

None

#### 4.0 RATINGS

#### 4.1 VOLTAGE

250 Volts

**4.2 CURRENT** (Current is dependent on connector size, contact material, plating, ambient temperature, printed circuit board characteristics and related factors. Actual current rating is application dependent and should be evaluated for each application.)

#### a. For Crimp Terminals- and Applicable Wires

Wire	Amps (Max)	Amps (Max)	Wire Insulation Dia
Awg	With Brass	With Phos Bronze	
18	5.00	7.00	See terminal drawings
20	4.75	6.25	See terminal drawings
22	4.50	5.50	See terminal drawings
24	4.25	5.00	See terminal drawings
26	4.00	4.50	See terminal drawings

REVISION:	ECR/ECN INFORMATION: EC No: UCR2002-0299  DATE: 2001 / 09 / 18	PRODU	JCT SPECIFICATION TER KK CONNECT		1 of 5
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# 4.2 CURRENT (cont)b. For Printed Circuit Board Connectors

Connector Style	Amps (Max) With Brass	Amps (Max) With Phos Bronze
Top Entry	4.50	5.00
Right Angle	4.50	5.00
Bottom Entry	4.00	4.50

### 4.3 TEMPERATURE (ambient + 30°C temp rise)

	Brass	Phos Bronze
Operating Temperature	0°C to +50°C	0°C to +75°C
Non Operating Temperature	-40°C to +105°C	-40°C to +105°C

### **5.0 PERFORMANCE**

### **5.1 ELECTRICAL REQUIREMENTS**

DESCRIPTION	TEST CONDITION	REQUIREMENT
Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA.	10 milliohms MAXIMUM [initial]
Contact Resistance of Wire Termination (Low Level)	Terminate the applicable wire to the terminal and measure wire using a voltage of 20 mV and a current of 100 mA.	2 milliohms MAXIMUM [initial]
Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
Dielectric Withstanding Voltage	Unmate connectors: apply a voltage of {two times the rated voltage plus 1000 volts} VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown
Capacitance	Measure between adjacent terminals at 1 MHz.	1.2 picofarads MAXIMUM
Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after:  1) 96 hours (steady state)  2) 240 hours (45 minutes ON and 15 minutes OFF per hour)  3) 96 hours (steady state)	Temperature rise: +30°C MAXIMUM

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### **5.2 MECHANICAL REQUIREMENTS**

DESCRIPTION	TEST CONDITION	REQUIREMENT
Connector Mate and Unmate Forces	Per circuit when mated to an .045 Sq. pin.  Mate and unmate connector (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute.	10.0 N (2.25 lbf) MAXIMUM insertion force & 3.7 N (0.84 lbf) MINIMUM withdrawal force
Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch). (Forces will change with platings and materials.)	17.8 N (4.0 lbf) MAXIMUM insertion force
Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of $25 \pm 6$ mm ( $1 \pm \frac{1}{4}$ inch) per minute. (Forces will change with platings and materials.)	35.6 N (8.0 lbf) MINIMUM withdrawal force
Durability	Mate connectors up to 25 cycles at a maximum rate of 10 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)
Vibration (Random)	Mate connectors and vibrate per EIA 364-28, test condition VII.	10 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
Shock (Mechanical)	Mate connectors and shock at 50 g's with ½ sine wave (11 milliseconds) shocks in the ±X,±Y,±Z axes (18 shocks total).	10 milliohms MAXIMUM (change from initial]) & Discontinuity < 1 microsecond
Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch). (For maximum performance use Molex application tooling with stranded tinned copper wire)	18 awg = 89 N (20 lbf) 20 awg = 66 N (15 lbf) 22 awg = 53 N (12 lbf) 24 awg = 35 N (8 lbf) 26 awg = 22 N (5 lbf)
Normal Force	Apply a perpendicular force.	7.34 N (748 grams) average

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### **5.3 ENVIRONMENTAL REQUIREMENTS**

DESCRIPTION	TEST CONDITION	REQUIREMENT
Shock (Thermal)	Mate connectors; expose to 5 cycles of:  Temperature °C Duration (Minutes)  -40 +0/-3 30  +25 ±10 5 MAXIMUM  +105 +3/-0 30  +25 ±10 5 MAXIMUM	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
Thermal Aging	Mate connectors; expose to: 96 hours at 105 ± 2°C	10 milliohms MAXIMUM (change from initial]) & Visual: No Damage
Humidity (Steady State)	Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours.  Note: Remove surface moisture and air dry for 1 hour prior to measurements.	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
Humidity (Cyclic)	Mate connectors: cycle per EIA-364-31: 24 cycles at temperature 25 ± 3°C at 80 ± 5% relative humidity and 65 ± 3°C at 50 ± 5% relative humidity; dwell time of 1.0 hour; ramp time of 0.5 hours.  {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	10 milliohms MAXIMUM (change from initial) & Dielectric Withstanding Voltage: No Breakdown at 500 VAC & Insulation Resistance: 1000 Megohms MINIMUM & Visual: No Damage
Solderability	Per SMES-152	Solder coverage: 95% MINIMUM (per SMES-152)

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### **5.3 ENVIRONMENTAL REQUIREMENTS**

DESCRIPTION	TEST CONDITION	REQUIREMENT		
Solder Resistance	Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 230 ± 5°C	Visual: No Damage to insulator material		
Salt Spray	Mate connectors: Duration: 48 hours exposure; Atmosphere: salt spray from a 5% solution; Temperature: 35 +1/-2°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage		
Cold Resistance	Mate connectors: Duration: 96 hours; Temperature: -40 ± 3°C	10 milliohms MAXIMUM (change from initial) & Visual: No Damage		
Corrosive Atmosphere: Flowing Mixed Gas (FMG)	Mate connectors: Test per EIA-364-65, method 2A	10 milliohms MAXIMUM (change from initial) & Visual: No Damage		

### 6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.

7.0 GAGES AND FIXTURES

8.0 OTHER

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