



PRELIMINARY PRODUCT SPECIFICATION

MarKK TERMINAL SERIES

1.0 SCOPE

This product spec covers the operational performance of the 45570 kk crimp terminal series with tin plating in the single row kk housing at 3.96/.156 center line. This system is for use with (1.14)/.045 square pins for wire to board applications. Product performance is optimized with pre-tinned stranded wire.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Product Name	Part Number Series
Female Terminal - MarKK	45570
Receptacle Housing 3.96/.156 kk (single row)	41695, 6442
Vertical Header – (square pins)	All .156" Centerline Pin Headers

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate sales drawings for the information on dimensions, materials, platings and markings.
Material: RoHS compliant.

2.3 SAFETY AGENCY APPROVALS

U.L. FILE #E29179

CSA CERT # LR19980

SERIES	Agency Voltage Rating (AC RMS or DC) except as noted		Agency Current Rating (Single Circuit) (Amps)		Agency Temperature Rating (°C)
	UL	CSA	UL	CSA	UL
41695	600	250VAC	13*	13*	105°C
6442	600**	-	13**	-	105°C

* Single pole tested

** 6442 UL rating: 600V 13A for single circuit, 250V 7A, fully loaded

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the appropriate sales drawings and other sections of this specification for the necessary referenced documents and specifications.

4.0 RATINGS

4.1 VOLTAGE

600 Volts AC (RMS)/DC

REVISION: A1	ECR/ECN INFORMATION: EC No: UCP2014-1506 DATE: 2013 / 10 / 22	TITLE: PRODUCT SPECIFICATION FOR MarKK CONNECTOR SYSTEM	SHEET No. 1 of 4
DOCUMENT NUMBER: PS-45570-001	CREATED / REVISED BY: Mark Data / MKIPPER	CHECKED BY: JBELL	APPROVED BY: FSMITH-ROEMER



PRELIMINARY PRODUCT SPECIFICATION

4.2 CURRENT AND APPLICABLE WIRES

	Pre-Tinned Wire		Bare Copper Wire	
	2 ckt.	3 to 18 ckt.	2 ckt.	3 to 18 ckt.
18 AWG	13A	10.5A	11.5A	10A
20 AWG	11A	8A		

**Product tested to 30 degrees C T-Rise with pre-tinned and/or bare copper stranded wire as shown.

** Current rating is application dependent. Above rating is a guideline only. Appropriate de-rating is required per ambient conditions, wire type, wire stranding and gross heating from adjacent modules/components and other factors that influence connector performance.

4.3 TEMPERATURE

Operating: -40°C to +105°C

No operating: -40°C to +85°C

(Including 30 degrees C terminal temperature at full current)

5.0 PERFORMANCE

5.1 ELECTRICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
1	Contact Resistance (Low Level)	Mate connectors: apply a maximum voltage of 20 mV and a current of 100 mA . (Measurement locations in Section 7.0)	10 milliohms MAXIMUM [initial]
2	Contact Resistance @ Rated Current	Mate connectors: apply a maximum voltage of 20 mV at rated current. (Measurement locations in Section 7.0)	10 milliohms MAXIMUM [initial]
3	Insulation Resistance	Unmate & unmount connectors: apply a voltage of 500 VDC between adjacent terminals and between terminals to ground.	1000 Megohms MINIMUM
4	Dielectric Withstanding Voltage	Unmated connectors: apply a voltage of 1500 volts VAC for 1 minute between adjacent terminals and between terminals to ground.	No breakdown; current leakage < 5 mA
5	Capacitance	Measure between adjacent terminals at 1 MHz .	2 Pico farads MAXIMUM
6	Temperature Rise (via Current Cycling)	Mate connectors: measure the temperature rise at the rated current after 96 hours , during current cycling (45 minutes ON and 15 minutes OFF per hour) for 240 hours and after final 96 hour steady state. Per EIA-364-70	Temperature rise: +30°C MAXIMUM

REVISION: A1	ECR/ECN INFORMATION: EC No: UCP2014-1506 DATE: 2013 / 10 / 22	TITLE: PRODUCT SPECIFICATION FOR MarKK CONNECTOR SYSTEM	SHEET No. 2 of 4
DOCUMENT NUMBER: PS-45570-001	CREATED / REVISED BY: Mark Data / MKIPPER	CHECKED BY: JBELL	APPROVED BY: FSMITH-ROEMER



PRELIMINARY PRODUCT SPECIFICATION

5.2 MECHANICAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
7	Terminal Insertion and Withdrawal Forces (Applies to 1st mating cycle only)	Insert and withdraw terminal (male to female) at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. (Gage dimensions in Section 7.0)	8.89 N (2.00 lbf)/CKT. MAXIMUM insertion force & 2.20 N (.49 lbf) MINIMUM withdrawal force Avg insertion force 127.45 N (1.25 lbf)/ckt.
8	Terminal Retention Force (in Housing)	Axial pullout force on the terminal in the housing at a rate of 25 ± 6 mm (1 ± ¼ inch) per minute. Per EIA-364, TP29 Rev B	40.0 N (9.0 lbf) MINIMUM retention force
9	Durability	Mate connectors up to {25 cycles for tin (non-noble) plating at a maximum rate of 5 cycles per minute prior to Environmental Tests.	10 milliohms MAXIMUM (change from initial)
10	Vibration (Random)	Mate connectors and vibrate. Per EIA 364-28, test condition VII; Letter D.	20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond
11	Wire Pullout Force (Axial)	Apply an axial pullout force on the wire at a rate of 25 ± 6 mm (1 ± ¼ inch) .	18 Awg = 89.0 N (20.00lbf) Min 20 Awg = 57.0 N (13.00lbf) Min
12	Terminal Insertion Force (into Housing)	Apply an axial insertion force on the terminal at a rate of 25 ± 6 mm (1 ± ¼ inch) . Per EIA-364, TP05 Rev. B	5.78 N (1.30 lbf) MAXIMUM insertion force
13	Normal Force	Apply a perpendicular force. Per EIA-364-04 Method A	0.97 N (99grams) MINIMUM [Tin (non-noble) plating]

REVISION:	ECR/ECN INFORMATION:	TITLE:	SHEET No.
A1	EC No: UCP2014-1506 DATE: 2013 / 10 / 22	PRODUCT SPECIFICATION FOR MarKK CONNECTOR SYSTEM	3 of 4
DOCUMENT NUMBER:	CREATED / REVISED BY:	CHECKED BY:	APPROVED BY:
PS-45570-001	Mark Data / MKIPPER	JBELL	FSMITH-ROEMER



PRELIMINARY PRODUCT SPECIFICATION

5.3 ENVIRONMENTAL REQUIREMENTS

ITEM	DESCRIPTION	TEST CONDITION	REQUIREMENT
14	Fretting Corrosion (Thermal Shock)	Mate connectors: expose for 500 cycles between temperatures 15 and 85°C ; dwell 0.5 hours at each temperature. {Note: Remove surface moisture and air dry for 1 hour prior to measurements.}	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
16	Temperature Life (Thermal Aging)	Mate connectors; expose to: 120 hours at 105 ± 2°C Per EIA-364-17	10 milliohms MAXIMUM (change from initial) & Visual: No Damage
17	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
18	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

6.0 PACKAGING

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

7.0 GAGES AND FIXTURES

8.0 OTHER INFORMATION

REVISION: A1	ECR/ECN INFORMATION: EC No: UCP2014-1506 DATE: 2013 / 10 / 22	TITLE: PRODUCT SPECIFICATION FOR MarKK CONNECTOR SYSTEM	SHEET No. 4 of 4
DOCUMENT NUMBER: PS-45570-001	CREATED / REVISED BY: Mark Data / MKIPPER	CHECKED BY: JBELL	APPROVED BY: FSMITH-ROEMER