Product Specification Qik Flecs 50 Single Beam Connector Family

1.0 SCOPE

This Product Specification covers the 1.27 mm (0.05 inch) centerline, single beam QF50 connector series. The full product covered in this specification consists of: Female (lower) housing containing single beam (selective gold plated) terminals which, with an upper housing is terminated to the appropriate ribbon cable using Insulation Displacement Technology. Optional strain relief is then fitted and the whole assembly mates with the header assembly.

2.0 PRODUCT DESCRIPTION

2.1 PRODUCT NAME AND SERIES NUMBER(S)

Part Name	Part Number
Female Assembly	90635-****
Header Assembly	90663-**** & 90571-**** & 90572-****
Strain Relief	90170

2.2 DIMENSIONS, MATERIALS, PLATINGS AND MARKINGS

See the appropriate Sales drawings for information on dimensions, materials, platings and markings.

2.3 SAFETY AGENCY APPROVALS

90635, 90663, 90571 and 90572: UL file E29179 and CSA file LR19980 623301

3.0 APPLICABLE DOCUMENTS AND SPECIFICATIONS

See the appropriate Sales Drawings and any other sections of this specification for the necessary referenced documents and specifications.
See section 9.0 of this document for test sequence.

4.0 RATINGS

4.1 VOLTAGE

250 Volts AC (RMS) {or 250 Volts DC

4.2 CURRENT AND APPLICABLE WIRES

AWG	Amps	Outside Insulation Diameter
26 Stranded	1	1.14 mm (0.45 inch) maximum
28 Stranded	1	1.14 mm (0.45 inch) maximum
28 Solid	1	1.14 mm (0.45 inch) maximum

4.3 TEMPERATURE

Operating: - 25°C to + 105°C
Nonoperating: - 25°C to + 105°C

5.0 PERFORMANCE

5.1 Electrical Performance

Description	Test Condition	Requirement
Contact Resistance (Low Level)	**EIA-364-23C** Mate connectors: apply a maximum voltage of 20 mV and a current of 10 mA. (Measurement locations in Section 7.2)	20 mOhms Maximum
Insulation Resistance	**IEC 60512-3-1 (A)** Mate connectors with 500 VDC between adjacent terminals and between terminals and ground.	1000 MegOhms Minimum
Dielectric Strength	**IEC 60512-4-1 (A)** Apply a voltage of 500 VAC for 1 minute between adjacent terminals and between terminals & ground.	No breakdown
Visual Inspection	**IEC-60512-1-1**	There shall be no evidence of physical damage

5.2 Mechanical Performance

Description	Test Condition	Requirement
Pin insertion force	Insert pin fixture into contact at 25mm/min (see section 7.1)	Min = 1N Max = 4N per contact
Durability	**EIA-364-09 (D)** Mate connectors at 10 cycles/minute to: 300 cycles for GS2 plating 100 cycles for GS3 plating 50 cycles for GS1 plating	Contact resistance cycles Initial: 20 mOhms Max Final: 40 mOhms Max
Vibration	**IEC 60512-6-4** Amplitude: 1.5mm/0.06 inches peak to peak. Sweep: 10-55-10 Hertz in 1 minute Duration: 2 hours in each X-Y-Z axis (see section 7.3)	Appearance : No Damage Contact Resistance: 20 milliohms MAXIMUM (change from initial) & Discontinuity: 1 microsecond max
Reseating	Manually unplug/plug the connector or socket. Perform 3 such cycles	No evidence of physical damage

Mechanical Shock	**IEC 60512-6-3** Mate connectors and shock at 50 G's in each x-y-z axis.	Appearance: No Damage Contact Resistance: 20 milliohms MAXIMUM (change from initial) & Discontinuity < 1 microsecond max
Upper Housing Retention Force	The female header is removed from the lower housing by a force applied to cable at 25 ± 6 mm (1 ± ¼ inch) per minute. (See section 7.4)	50 N minimum.
Pin Retention Force	Apply axial force to mating end of pin assembled in the header at 25 ± 6 mm (1 ± ¼ inch) per minute	15 N minimum.

PENDING APPROVAL

5.3 Environmental Performance

Description	Test Condition	Requirement
Thermal Shock	**IEC 60068-2-14** Mate connectors exposed for 5 cycles of: Temp Duration -55°C 30 minutes +25°C 5 minutes max +125°C 30 minutes +25°C 5 minutes max	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.
Temperature Life	**IEC 60068-2-2** Mate connectors exposed for 500 hours at 105 ± 2°C	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.
Cyclic Humidity	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.}	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.
Salt Spray	**IEC 60068-2-11** Mate connectors: Duration: 48 hours exposure; Atmosphere: salt spray from a 5% solution; Temperature: 35 ± 3°C	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.

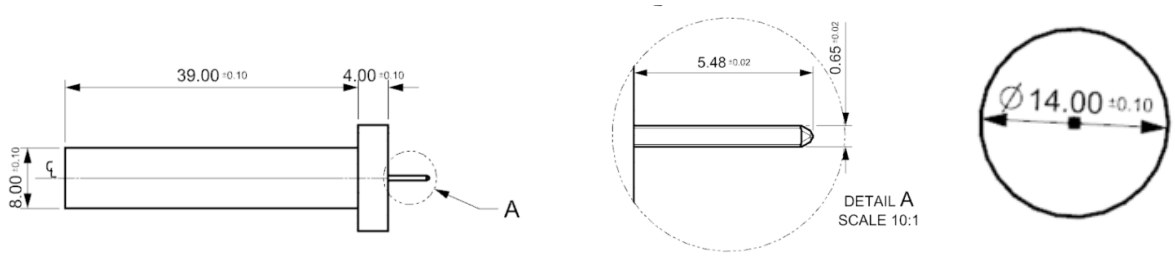
Humidity Steady State	**EIA-364-31D** Mate connectors: expose to a temperature of 40 ± 2°C with a relative humidity of 90-95% for 96 hours. Note: Remove surface moisture and air dry for 1 hour prior to measurements.	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.
Solderability	Per **IEC 60068-2-58 (6)**	Solder coverage: 95% MINIMUM (per SMES-152)
Resistance to Solder Heat	**IEC 60068-2-20** Dip connector terminal tails in solder: Solder Duration: 5 ± 0.5 seconds; Solder Temperature: 245 ± 5°C {Recommend same parameters as SMES-152.}	Visual: No Damage to insulator material
Sulphurus gas	Per **IEC-60068-2-42** Temperature 25ºC± 2ºC Relative Humidity 75% ±5% Concentration 25ppm SO2 gas Exposure time: 1 Day Mated	Requirement Appearance: No damage Contact resistance: 20 mOhms max change from initial.
Temperature Rise	**IEC 60512-5-1** Mate the connectors and measure the contact temperature at the rated current load.	Maximum temperature of the terminal over ambient of 30°C
Thermal Disturbance	10 cycles of 15°C ± 3°C and 105°C ± 3°C with dwell time of 30mins. Ramp times should be a minimum of 2°C per min	No damage

6.0 PACKAGING

Parts shall be packaged to protect against damage during handling, transit and storage.
No Styrofoam shall be used in any packaging that comes in direct contact with the connectors.

7.0 GAGES AND FIXTURES

7.1 Pin Insertion Gauge



7.2 Contact Resistance

The positions to be measured are as shown in figure 7.2.
The conductor resistance of the cable shall be subtracted from the measurement value.

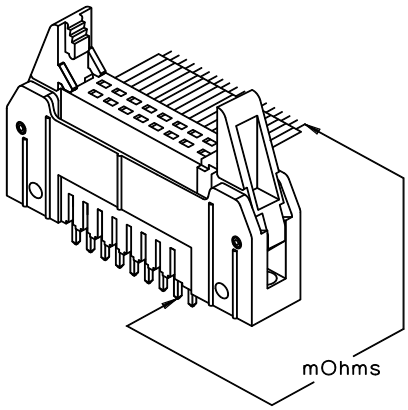


Figure 7.2

PENDING APPROVAL

7.3 Vibration
Samples shall be mounted to assure that mounting is free from resonances over the test frequency range (see Fig 7.3).

Samples to be subjected to simple harmonic motion having an amplitude of 1.5mm max.

The frequency range from 10 to 55 Hz and return to 10Hz shall be traversed in 1 minute 5 seconds.

This motion to be applied for 2 hours in each of 3 mutually perpendicular directions (total of 6 hours).

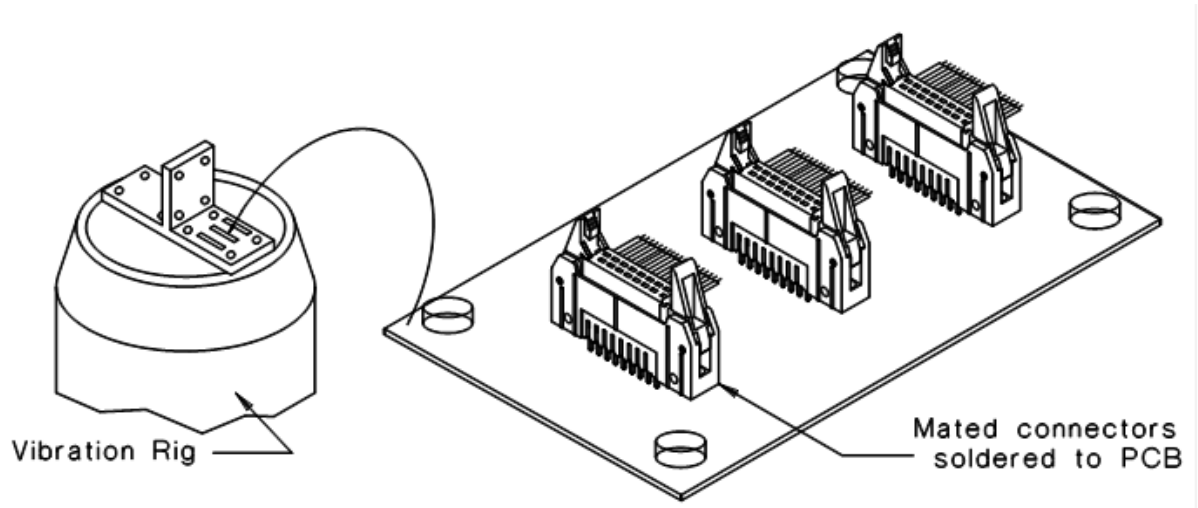


Figure 7.3

7.4 Upper Housing Retention
Assembled females are to be terminated with ribbon cable as shown in Figure 7.4.
A force shall be applied to the cable at a rate of (25 ± 3mm) / 1 ± 0.12" per minute.

The force required to remove the upper housing shall be measured. The strain relief clamp is not to be fitted. The fixture must not interfere with the movement of the upper housing.

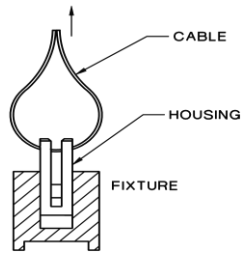
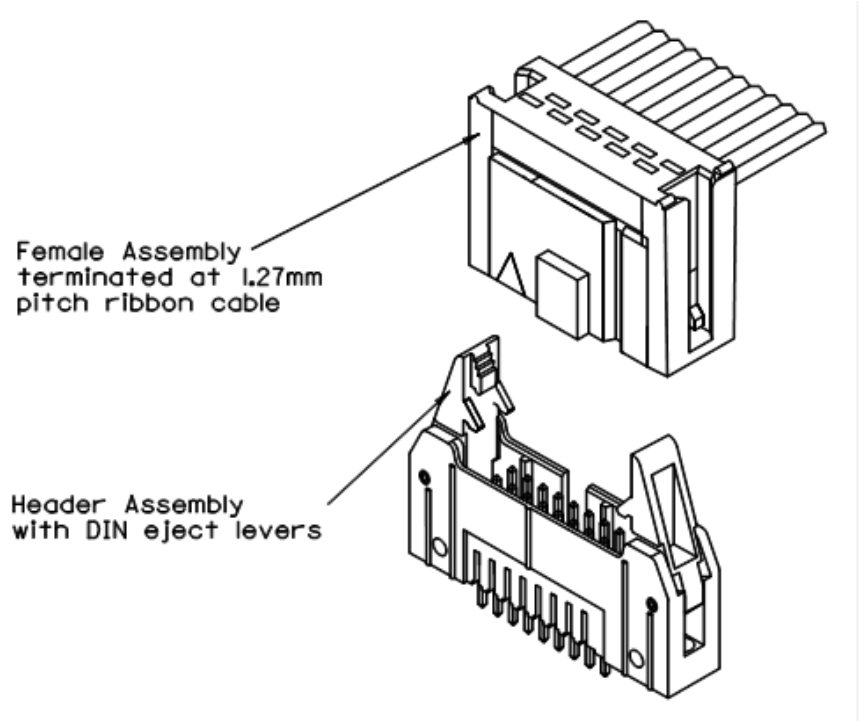


Figure 7.4

8.0 OTHER INFORMATION



9.0 TEST SEQUENCE

Test Item	Test Group									
	(A)	(B)	(C)	(D)	(E)	(F)	(G)	(H)	(I)	J)
Visual	6	4	14	10	4					
Total Resistance	1,3 ,5	1,3	1,5,9, 11,13	1,3 5, 1 7,9						
Insulation Resistance			2,7							
Withstanding Voltage			3,8							
Cyclic Humidity	2									
Mechanical Durability	4				2					
Salt Spray		2								
Thermal Shock			4							
Humidity			6							
Vibration			10							
Mechanical Shock			12							
Temperature Life				2						
SO2 Gas				4						
Pin Insertion					1,3					
Solderability						1				
Resistance to Solder Heat							1			
Pin Retention Force								1		
Upper Housing Retention Force									1	
Temperature Rise										1
Thermal Disturbance				6						
Reseating				8						