Squib Connector AK-II

1. Scope:

This specification covers the requirements for product performance, test methods and quality assurance provisions of Squib Connector AK-II.

본 시방서는 스퀴브 커넥터(AK-II)의 성능과 시험 방법 그리고 품질 보증 규정을 설명하는 것이 목적임.

2. Applicable documents:

The following documents form a part of this specification to the extent specified herein. In the event of conflict between the requirements of this specification and the product drawing, the product drawing shall take precedence. In the event of conflict between the requirements of this specification and the referenced documents, this specification shall take precedence.

다음의 문서는 포괄적으로 설명된 이 시방서의 일부분임. 시방서와 제품 도면의 요구조건에서 상이한 것이 있으면, 제품 도면을 우선함. 이 시방서와 참조 문서의 요구조건에서 상이한 것이 있으면, 이 시방서를 우선함.

2.1 Related documents

A. 114-61022: Application specification, Squib Contact (Socket for Dia.1mm Pin)

B. 411-61002: Instruction Sheet

C. 408-61002: Instruction Sheet

2.2 Applicable drawings: 2005339 (Interface drawing: 999-U-002-1-Z02)

Drawings No.	Description
2005510	SQUIB CONNECTOR 2P PLUG HSG (AK-II TYPE)
2005511	COVER HSG FOR SQUIB CONNECTOR 2P PLUG ASS'Y
2005512	LOCKING BUTTON FOR SQUIB CONNECTOR 2P PLUG ASS'Y
2005937	FERRITE FOR SQUIB CONNECTOR 2P PLUG ASS'Y
2005939	1mm DIA. PIN SOCKET CONTACT FOR SQUIB CONNECTOR (AK-II TYPE)

3. Requirements

3.1 Design and Construction

Product shall be of the design, construction and physical dimensions specified on the applicable product drawing.

제품은 적용 제품 도면에 명기된 설계, 구조 그리고 치수를 만족.

3.2 Material:

A.	Contact:	Copper Alloy (Partial Gold and Tin plating over Ni under plating)
B.	Housing:	PBT+GF10
C.	Cover housing:	PBT+GF15
D.	Locking button:	PBT+GF15
E.	Other:	Ferrite (D40)

3.3 Ratings:

Temperature rating shall be within the range of -40℃ to +85℃.

This rating includes ambient temperature.

온도 범위는 -40℃에서 +85℃이내임. 이 범위는 주위 온도를 포함함.

3.4 Performance Requirements and Test Descriptions:

The product shall be designed to meet the electrical, mechanical and environmental performance requirements specified in 3.5 and 3.6 paragraphs. All tests shall be performed in the room temperature, unless otherwise specified.

제품은 3.5 와 3.6 절에서 설명한 요구조건인 전기적, 기계적 그리고 환경적인 성능에 부합하게 설계. 별도의 설명이 없으면, 모든 시험은 상온에서 수행.

3.5 Test Requirements and Procedures Summary:

3.5.1 Visual Inspection.

Requirement-	Assure parts used for testing are free of damage and obvious defects.
요구조건-	손상과 뚜렷한 결점이 없는 시험에 사용될 부품을 보증함.
Procedure-	Visually, dimensionally and functionally inspected per applicable qualify inspection plan.
절차-	적용되는 검사 계획에 해당하는 시각, 치수 그리고 기능적 검사

* Electrical Requirements

3.5.2 Termination Resistance (Low Level)

Requirement- Contact 10 mΩ Max. (Initial, Final)

요구조건- 단자 10 mΩ Max. (초기, 최종)

Procedure- Subject mated contacts assembled in housing to 20 ± 5mV open circuit at 100 mA Max.
Refer to Fig. 1

절차- 시험 sample 은 최대 100 mA 의 개회로에서 20 ± 5mV 하우징에 조립된 단자 결합.
Fig. 1 참조

3.5.3 Dielectric withstanding Voltage

Requirement- No creeping discharge or flashover shall occur

요구조건- 성능저하 혹은 flashover(방전에 의한 섬락)가 발생하지 않을 것.

Procedure- Impressed voltage 1kVAC for 1min. mated connector.
Refer to Fig. 2

절차- 커넥터 결합 상태에서 1 분 동안 1kVAC 전압 통전.
Fig. 2 참조

3.5.4 Insulation Resistance

Requirement- 100 MΩ Min. (Initial, Final)
Record the resistance after 15 sec of stabilized readings.

요구조건- 최소 100 MΩ. (초기, 최종)
안정된 판단을 위해 15 초 후에 저항을 기록

Procedure- Impressed voltage 500 VDC. mated connector
Refer to Fig. 2

절차- 커넥터 결합 상태에서 500VDC 전압 통전
Fig. 2 참조

3.5.5 Instant Cutoff

Requirement- No electrical discontinuity exceeds 7.0ohms for more than 1 μsec. shall occur.

요구조건- 1 μsec 이상 7 ohms 을 초과하는 단락이 발생하지 않을 것.

Procedure- Connect in series. Apply power with a waveform recorder and check.

절차- 쌍으로 연결. 파형 기록이 가능한 전류 공급과 확인

* Physical Requirements

3.5.6 Contact Mating Force

Requirement- 1.5 ~ 5N

요구조건- 1.5 ~ 5N

Procedure- Operation speed: 50mm/min. Measure the force required to mate contact.
Using tab terminal or Ø1.03mm steel test pin (389001-002(A)) with Ra 0.4um.

절차- 작동 속도: 50mm/min. 단자 결합에 필요한 힘 측정.
Tab 단자 혹은 표면조도 0.4um 의 시험 핀 (389001-002(A)) Ø 1.03mm 사용

3.5.7 Contact Unmating Force

Requirement- 0.5 ~ 5N

요구조건- 0.5 ~ 5N

Procedure- Operation speed: 50mm/min. Measure the force required to unmate contact.
Using tab terminal or Ø0.97mm steel test pin (389001-002(B)) with Ra 0.4um.

절차- 작동 속도: 50mm/min. 단자 이탈에 필요한 힘 측정.
Tab 단자 혹은 표면조도 0.4um 의 시험 핀 (389001-002(B)) Ø 0.97mm 사용

3.5.8 Connector Mating Force

Requirement- 45N Max.

요구조건- 최대 45N

Procedure- Operation speed: 50mm/min. Measure the force required to mate connectors

절차- 작동 속도: 50mm/min. 커넥터 결합에 필요한 힘을 측정함.

3.5.9 Connector Unmating Force

Requirement- 45N Max without locking mechanism

요구조건- Lock 이 되지 않았을 때 최대 45N

Procedure- Operation speed: 50mm/min. Measure the force required to unmate connectors

절차- 작동 속도: 50mm/min. 커넥터 이탈에 필요한 힘을 측정함.

3.5.10 Connector Locking Strength

Requirement- 110N min with primary locking mechanism.

요구조건- Lock 상태일 때 최소 110N

Procedure- Operation speed: 50mm/min. Measure locking strength with locking button.

절차- 작동 속도: 50mm/min. locking button 이 결합된 locking 힘을 측정함.

3.5.11 Contact Retention Force

Requirement- 80N min (initial), 70N min (final)

요구조건- 최소 80N (초기), 최소 70N (최종)

Procedure- Operation speed: 50mm/min. Measure contact retention force with cover.

절차- 작동 속도: 50mm/min. cover 가 결합된 단자 유지력 측정함.

3.5.12 Crimp Tensile Strength

Requirement- 0.5 SQ wire: 75N min. (initial, final)

요구조건- 0.5 SQ 전선: 최소 75N (초기, 최종)

Procedure- Operation speed: 50mm/mim.

Apply an axial pull-off load to crimped wire of contact secured on the tester.

절차- 작동 속도: 50mm/min.

시험기에 고정된 압착된 단자를 축 방향으로 당겨 적용함.

* Environment Requirements

3.5.13 Thermal Shock

Requirement- Satisfy requirements of test item on the "3.6 sequence."

요구조건- "3.6 절차"에 해당하는 시험 항목 요구 조건을 만족 할 것.

Procedure- Mated connector. -40℃/30min. 85℃/30min. Temperature transfer time: 5min. Max.

Making this a cycle. Repeat 100 cycles.

Refer to Fig. 3

절차- 결합된 커넥터. -40℃/30 분, 85℃/30 분. 온도변화: 5 분 이내.

100 회 반복.

Fig. 3 참조

3.5.14 Temperature, Humidity

Requirement- Satisfy requirements of test item on the "3.6 sequence."

요구조건- "3.6 절차"에 해당하는 시험 항목 요구 조건을 만족 할 것.

Procedure- Mated connector. 90 ±10 % R.H, -40 ~ 85℃. 24 hours per 1 cycle.
Repeat 10 cycle. Refer to Fig. 4

절차- 결합된 커넥터. 상대습도 90 ± 10 %, -40 ~ 85℃. 24 시간 10 회 반복. Fig. 4 참조

3.5.15 Temperature Life (Heat Aging)

Requirement- Satisfy requirements of test item on the "3.6 sequence."

요구조건- "3.6 절차"에 해당하는 시험 항목 요구 조건을 만족 할 것.

Procedure- Mated connector, 85℃, 1008 hours

절차- 결합된 커넥터, 85℃, 1008 시간

3.5.16 Compound Environment Resistance

Requirement- Satisfy requirements of test item on the "3.6 sequence."

요구조건- "3.6 절차"에 해당하는 시험 항목 요구 조건을 만족 할 것.

Procedure- Temperature: 85℃, Grms=1.81, Vibration Direction: X, Y, Z
Duration: 8 hours per each direction. Refer to Fig. 5

절차- 온도: 85℃, Grms=1.81, 진동 방향: X, Y, Z, 지속: 축 당 8 시간: Fig. 5

3.5.17 Resistance to Shock

Requirement- Satisfy requirements of test item on the "3.6 sequence."

요구조건- "3.6 절차"에 해당하는 시험 항목 요구 조건을 만족 할 것.

Procedure- Acceleration: 35G, Waveform: Half sine wave, Duration: 10 msec.
Number of drops: 10 times each direction
six directions (upward, downward, to the left and right, to the front and rear)
Mounting: Refer Fig. 6

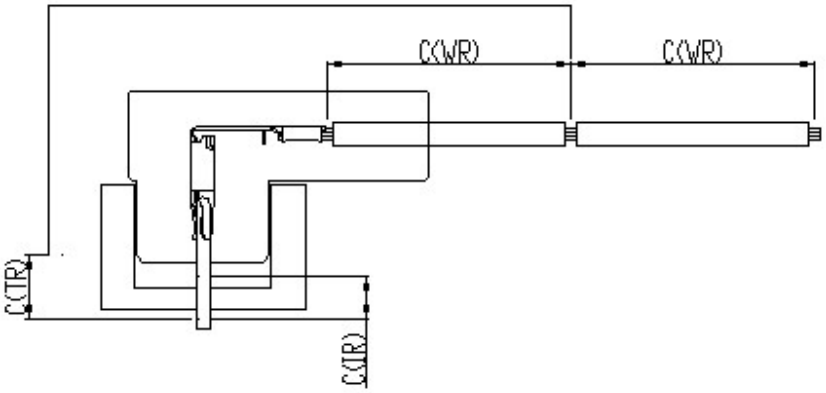
절차- 가속: 35G, 파형: 반 sin 파, 지속: 10 msec.
Drop 의 수: 각 방향 별 10 회
6 방향 (위로, 아래로, 왼쪽 그리고 오른쪽으로, 앞쪽 그리고 뒤쪽으로)
지지대: Fig. 6 참조

3.6 Product Qualification Test Sequence

Test Examination	Test Group (sample quantity: 10)									
	1	2	3	4	5	6	7	8	9	10
	Test Sequence*									
Visual Inspection	1,4	1,4	1,3	1,3	1,3	1,4	1	1	1	1
Termination Resistance (Low Level)							2,4	2,4	2,6	2,5
Dielectric with standing Voltage						2			5	
Insulation Resistance						3			4	
Instant Cutoff										3,4
Contact Mating Force	2									
Contact Unmating Force	3									
Connector Mating Force		2								
Connector Unmating Force		3								
Connector Locking Strength			2							
Contact Retention Force				2					7	
Crimp Tensile Strength					2					6
Thermal Shock								3		
Temperature, Humidity									3	
Temperature Life (Heat Aging)							3			
Compound Environment Resistance										4
Resistance to Shock										3

* Numbers indicated sequence in which tests are performed.

*** Appendix**



C(R) = C(TR) - [C(WR) + C(IR)]

*C(WR) = 75mm or 100mm

Fig.1

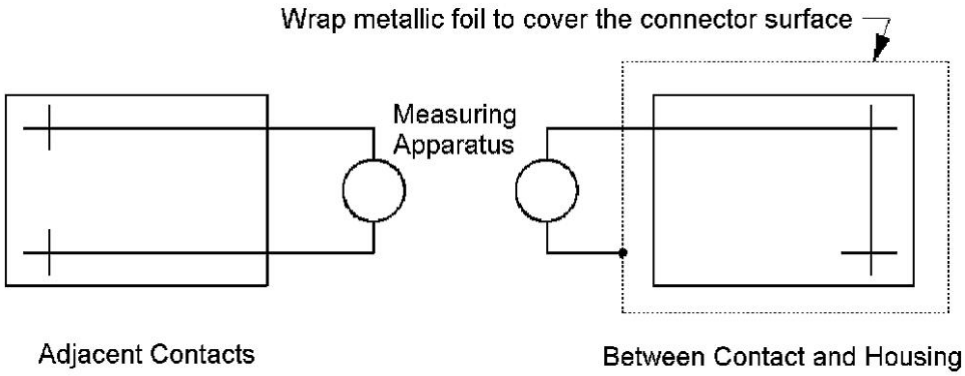


Fig. 2

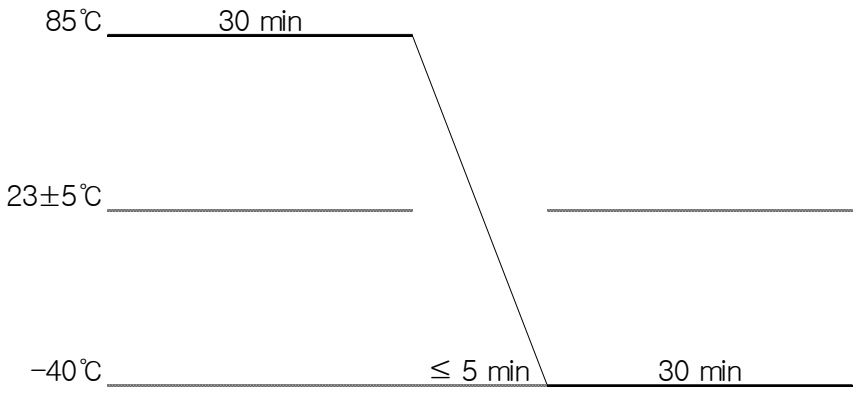


Fig. 3

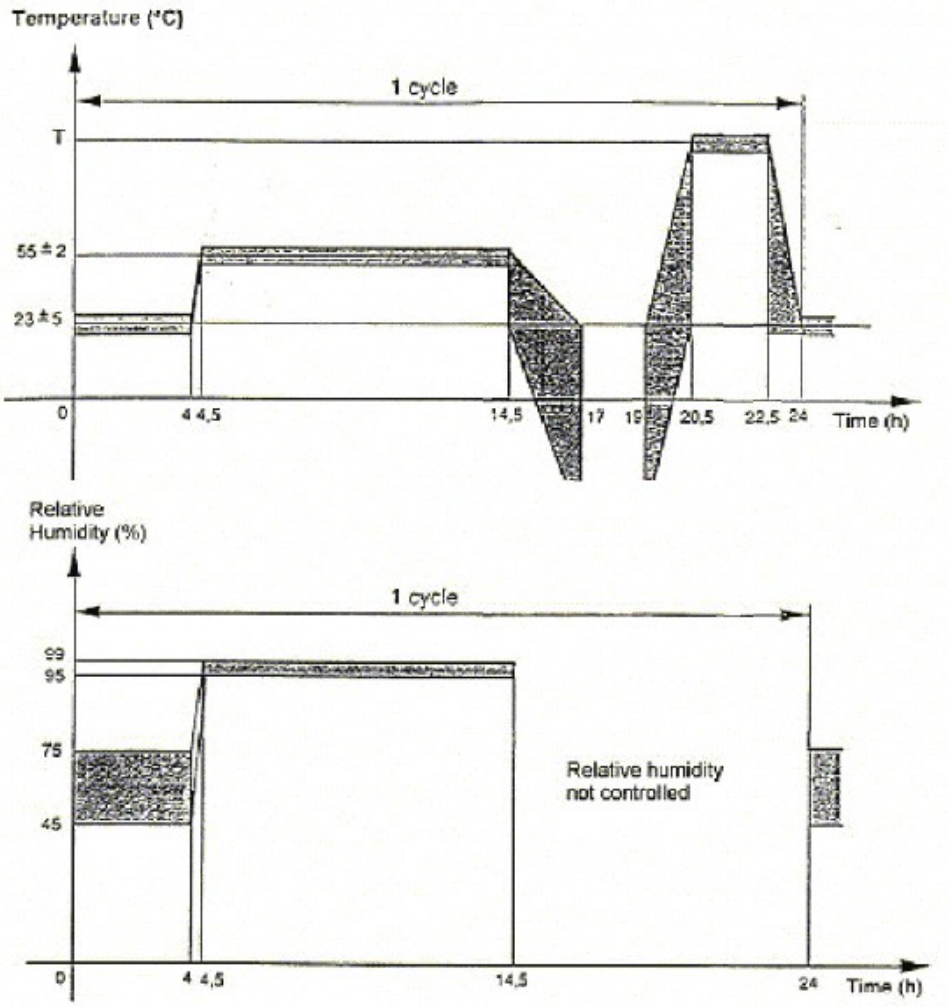

Temperature (°C)
1 cycle
T
55 ± 2
23 ± 5
0
4
4,5
14,5
17
19
20,5
22,5
24
Time (h)
Relative Humidity (%)
1 cycle
99
95
75
45
Relative humidity not controlled
0
4
4,5
14,5
24
Time (h)

Fig. 4

Frequency (hz)	Power Spectral Density (g^2/hz)
5.0	0.00200
12.5	0.24800
77.5	0.00320
145.0	0.00200
200.0	0.01180
230.0	0.00032
1000.0	0.00002
Grms = 1.81	

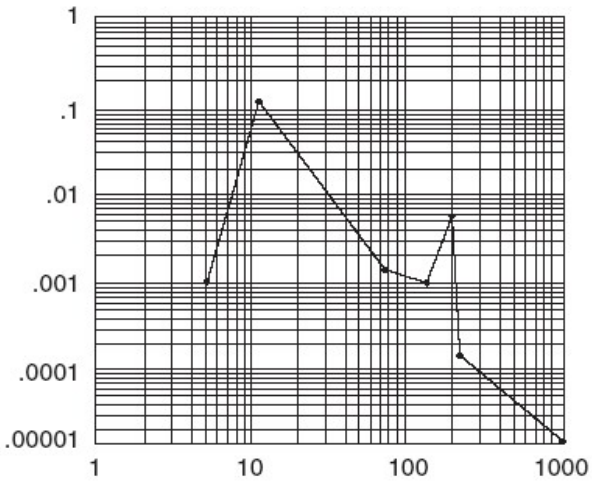


Fig. 5

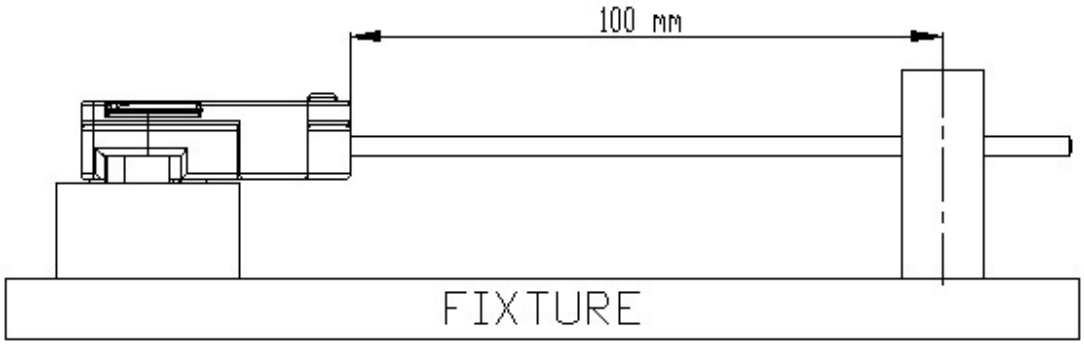


Fig. 6

4. Revision History

B1	REVISED - Physical Requirements Updated	26.OCT.'11
B	REVISED - Drawing No. Updated	12.FEB.'10
A	RELEASED	31.MAR.'09
REV.	REVISION RECORD	DATE

5. Specification Approval

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