

NICOMATIC Test report summary

CMM Family

DIELECTRIC WITHSTANDING VOLTAGE Test



I. Introduction

A. Purpose

The CMM connectors' family are manufactured to meet or exceed the requirements of **MIL-DTL-55302G** standard.

B. Scope

Measure the breakdown voltage of electrical connectors equipped with LF and/or HP contacts in order to specify withstanding and rated voltage at sea level and at 70 000 ft.

The following data has been taken from NICOMATIC Qualification test reports **QTR0807** and **QTR0810**.

C. Conclusion

The CMM connectors' family are **qualified** regarding **WITHSTANDING VOLTAGE AT SEA LEVEL** and **AT HIGH ALTITUDE (70 000 ft)** according to **MIL-DTL-55302G**.

	At Sea Level		
	Break down Voltage (V RMS)	Withstanding Voltage (V RMS)	Rated Voltage (V RMS)
LF Contacts	1500	1200	400
HP22 Contacts	1200	900	300
HP30 Contacts	2000	1500	500

	At 70 000 ft		
	Break down Voltage (V RMS)	Withstanding Voltage (V RMS)	Rated Voltage (V RMS)
LF Contacts	*	*	*
HP22 Contacts	400	300	100
HP30 Contacts	480	360	120

*Depend on the kind of contacts (PCB90°, Press fit, crimp ...)

II. Test Method and Requirements

A. List of Test Samples

a. CMM 200 Series

- 201Y50L – LF male contacts Straight PCB _ 13507
- 202Y50 – LF female contacts Straight PCB _ C14764

b. CMM 220 Series

- 221V50FXX – LF male contacts 90° PCB _ 13507
- 222S50MXX – LF female crimp contacts _ C12468
- 222YL26MXX – LF male contacts Straight PCB _ C14810
- 221S26FXX – LF male crimp contacts _ 12969
- 221D00FXX-0008-3400CMM – HP30 male contacts 90° PCB _ 30-3400-CMM
- 222E00MXX-0008-4320 – HP30 female straight contacts on cable _ 30-4320
- 222Y08SXX-0004-4300CMM – HP30 + LF female contacts Straight PCB _ 30-4300-CMM + C14764
- 221S08FXX-0004-3308 – HP30 + LF male contacts Straight on cable _ 30-3308 + 12969
- 221S06FXX-0003-3320 – HP30 + LF male contacts Straight on cable _ 30-3320 + 12969
- 222S06MXX-0003-4308 – HP30 + LF female contacts Straight on cable _ 30-4308 + C12468

c. CMM 320 Series

- 321C057FXX – LF male crimp contacts _ 12960
- 322C057MXX – LF female crimp contact _ C13064-P
- 321V096FXX – LF male contacts 90° PCB _ 13507
- 322Y096MXX – LF female contacts Straight PCB _ C14812
- 341D000FXX-0018-340014 – HP22 male contacts 90° PCB _ 22-3400-XX
- 342E000MXX-0018-4310 – HP22 female straight contacts on cable _ 22-4310
- 342D000MXX-0048-430014 – HP22 female contacts Straight PCB _ 22-4300-14
- 341E000FXX-0048-3310 – HP22 male straight contacts on cable _ 22-3310

B. Requirements

According to **MIL-DTL-55302G** standard and **EIA-364-20C** test procedure method A:

Dielectric withstanding Voltage (sea level): 500 Volts RMS (AC), 60 Hz. Connectors shall show no evidence of breakdown or flashover.

Dielectric withstanding Voltage (70 000 ft): 100 Volts RMS (AC), 60 Hz. Connectors shall show no evidence of breakdown or flashover.

C. Test Method and Results

An increasing AC Voltage was applied at a rate of approximately 500 Volts RMS per second between the closest contacts, and between the fixation and the closest contact, until either breakdown or flashover occurred.

For purposes of standardization, the withstanding voltage shall be established as 75% of the minimum breakdown voltage of the connector, and it is suggested that the operating rated voltage of the connector be established as 1/3 of the withstanding voltage.

	Break down Voltage (V RMS)		Withstanding Voltage (V RMS)		Rated Voltage (V RMS)	
Altitude	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft
LF Contacts	1500	*	1200	*	400	*

*Depend on the kind of contacts (PCB90°, Press fit, crimp ...)

	Break down Voltage (V RMS)		Withstanding Voltage (V RMS)		Rated Voltage (V RMS)	
Altitude	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft
HP22 Contacts	1200	400	900	300	300	100

	Break down Voltage (V RMS)		Withstanding Voltage (V RMS)		Rated Voltage (V RMS)	
Altitude	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft	@ Sea Level	@ 70 000 ft
HP30 Contacts	2000	480	1500	360	500	120

LF contacts results at 70 000 ft:

			At 70 000 ft					
			90° PCB Type V	Straight PCB Type Y	Straight SMT Type T	90 SMT Type R	Crimp Type S-C	Straight PCB Press fit
LF Contacts	Break down Voltage (V RMS)	Male	600				440	480
		Female	480	600				
	Withstanding Voltage (V RMS)	Male	450				330	360
		Female	360	450				
	Rated Voltage (V RMS)	Male	150				110	120
		Female	120	150				