NICOMATIC

CREATIVE
INTERCONNECT
SOLUTIONS

EMM SERIES

PERFORMANCES ACCORDING TO MIL-DTL-83513G & MIL-DTL-55302G

STANDARD

SELF-DECLARATION OF CONFORMITY

HARSH

1.27mm pitch

The EMM connectors tested are measured under MIL-DTL-83513G and MIL-DTL-55302G standard and IEC test procedures

Manufacturer: NICOMATIC SA
173, rue des fougères-zone industrielle les Bracots
74890 BONS-EN-CHABLAIS – France
Tel. +33 (0)4 50 36 13 85 - Fax. +33 (0)4 50 36 11 33
http://www.nicomatic.fr - Email : nicomatic@nicomatic.fr

- We declare the products involved :

  - EMM Series

- Have been tested according to the following items of the MIL-DTL-83513G and MIL-DTL-55302G standard:
  See Auto Declaration Annex

- And comply or exceed with the level of performance required, provided that the product is applied for its intended use and conforms to the specifications of the manufacturer, and that the installation conforms to the relevant standards.

  Please refer to the Annex herewith: List of QUALIFICATION TESTS “MIL” for Reports numbers, titles and test results (specification data).

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Written by: JAGHMIM Adnane (Laboratory)

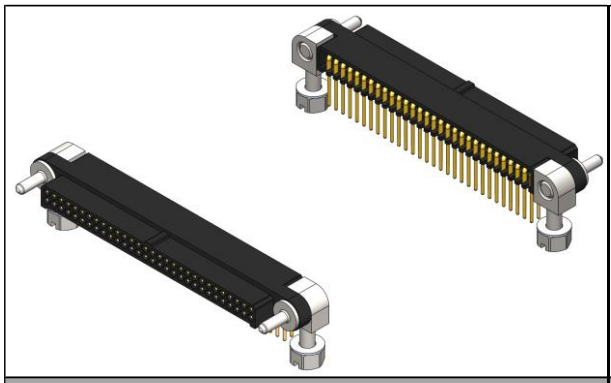
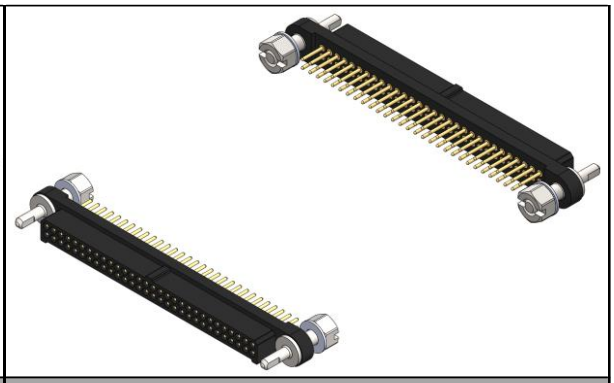
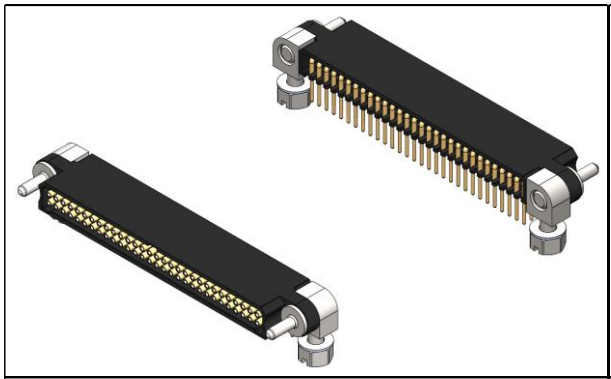
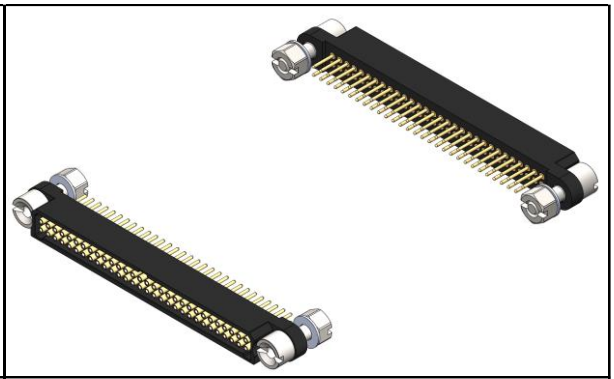
Approved by: CHIFFARD Claude (EMM Product Manager) and RIGAT Jerome (EMM project manager)

Signature and stamp of the Company:

NICOMATIC
Z.I. Les Bracots
F – 74890 BONS-EN-CHABLAIS
Tél. 33 (0)4 50 36 13 85
Fax 33 (0)4 50 36 11 33
SIRET 306 926 564 00017 – APE 2712 Z

I. EMM Connectors Qualified

From 4 contacts to 60 contacts and from AWG24 to AWG30 for cable versions

	
E221VxxE11	E221YxxE10
	
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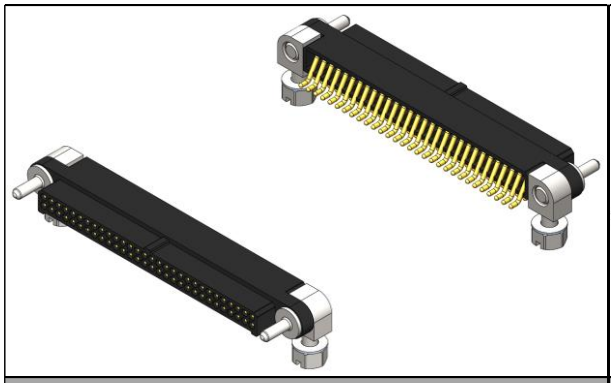
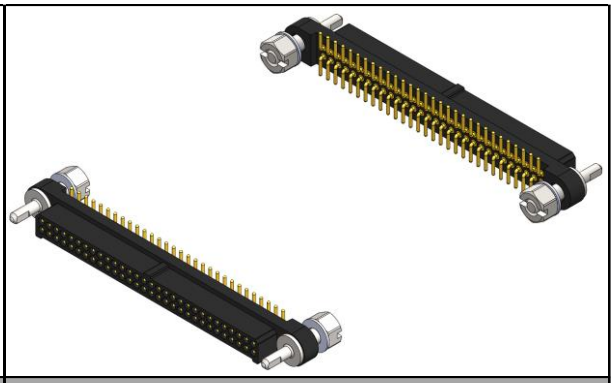
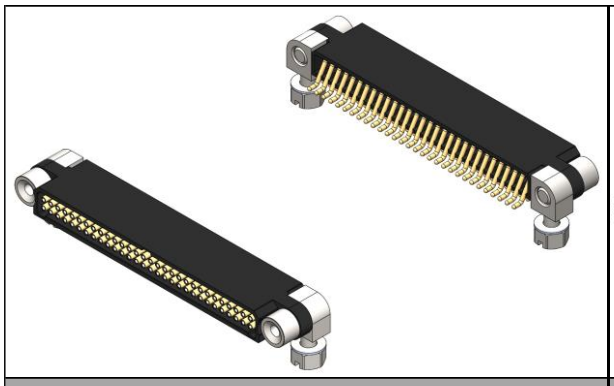
	
E221RxxE11	E221TxxE10



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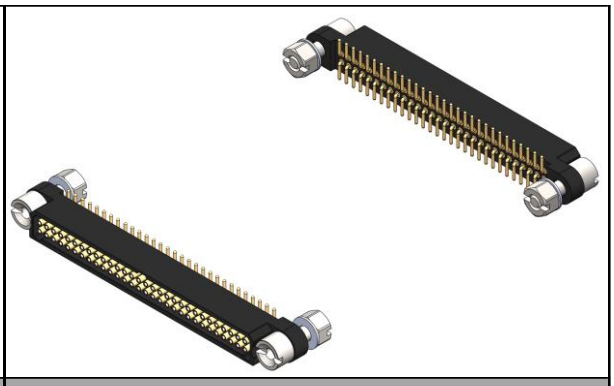
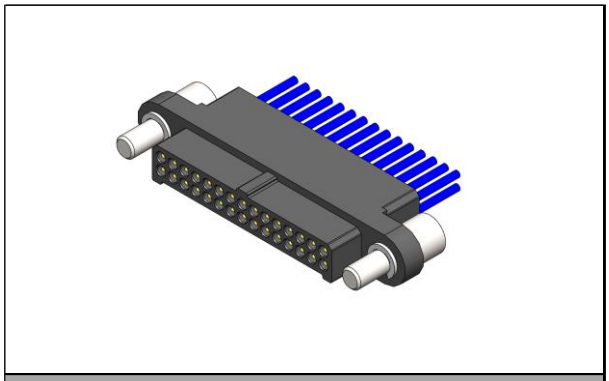


E222TxxE60



E221AxxE01 / E221BxxE01 / E221GxxE01

E221GxxE01 is the new codification for connectors qualified with codification E221CxxE01

II. Sampling

Qualification Sampling was done on 30 points connectors and 60 points connectors

Groups	Samples
1	E222YxxE60 (Female, Straight on PCB, E60 guiding) E222YxxE50 (Female Straight on PCB, E50) E221YxxE10 (Male, Straight on PCB, E10) E221VxxE11 (Male, 90° on PCB, E11 guiding) E222VxxE61 (Female, 90° on PCB, E61 guiding) E222VxxE51 (Female, 90° on PCB, E51 jackscrew) E221CxxE01 (Male, on cable AWG30, E01 jackscrew) E221CxxE01 (Male, on cable AWG28, E01 jackscrew) E221BxxE01 (Male, on cable AWG26, E01 jackscrew) E221AxxE01 (Male, on cable AWG24, E01 jackscrew) E221BxxE01-BP (Male, on cable AWG26, E01 jackscrew BP)
2	One half of Group 1 test samples
3	Other half of Group 1 test samples
4	18224-AWG24 / 18224-AWG26 / 18224-AWG28 / 18224-AWG30 Materials : LCP / PEEK / STYCAST 2651
5	E222YxxE50 (Female Straight on PCB, E50) E221YxxE10 (Male, Straight on PCB, E10) E221VxxE11 (Male, 90° on PCB, E11 guiding) E222VxxE51 (Female, 90° on PCB, E51 jackscrew)
6	E222YxxE60 (Female, Straight on PCB, E60 guiding) E222YxxE50 (Female Straight on PCB, E50) E221YxxE10 (Male, Straight on PCB, E10) E221VxxE11 (Male, 90° on PCB, E11 guiding) E222VxxE61 (Female, 90° on PCB, E61 guiding) E222VxxE51 (Female, 90° on PCB, E51 jackscrew) E221CxxE01 (Male, on cable AWG30, E01 jackscrew) E221CxxE01 (Male, on cable AWG28, E01 jackscrew) E221BxxE01 (Male, on cable AWG26, E01 jackscrew) E221AxxE01 (Male, on cable AWG24, E01 jackscrew) E221BxxE01-BP (Male, on cable AWG26, E01 jackscrew BP)
7	Ask for fixing list
8	Material tested : LCP
9	Materials tested : LCP (Housing) / Fixing / Contacts

III. QUALIFICATION TESTS

Groupe	Test Desigantion + Chronology + Ref Report	Procedure #	Technical Features
1	**1. Magnetic permeability** *QTR18008 - EMM Connectors - Magnetic Permeability*	ASTM A342/A342M	**Relative magnetic permeability :** < 2 µ
	2. Dielectric withstanding voltage @ sea level *QTR18009 - EMM Connectors - Dielectric Withstanding Voltage (Initial)* Performance between contacts	EIA-364-20C	**Breakdown Voltage (@ Sea Level):** 1000 V RMS Max **Dielectric Withstanding Voltage (@ Sea Level):** 750 V RMS Max **Rated Voltage (@ Sea Level):** 250 V RMS Max
	3. Dielectric withstanding voltage high altitude (70 000 ft) *QTR18009 - EMM Connectors - Dielectric Whithstanding Voltage (Initial)* Performance between contacts	EIA-364-20C	**@30 000ft:** Up to BV = 720 V RMS* / DWV = 540 V RMS* / RV = 180 V RMS* **@50 000ft:** Up to BV = 660 V RMS* / DWV = 495 V RMS* / RV = 165 V RMS* **@70 000ft:** Up to BV = 640 V RMS* / DWV = 480 V RMS* / RV = 160 V RMS* **@100 000ft:** Up to BV = 620 V RMS* / DWV = 465 V RMS* / RV = 155 V RMS*
	4. Insulation resistance *QTR18010 - EMM Connectors - Insulation Resistance (Initial)*	EIA 364-21C	**Insulation Resistance:** > 2000 GOhm (@ 500 V)
	5. Contact resistance *QTR18011 - EMM Connectors - Contact Resistance (Initial)*	EIA 364-06C	**Contact Resistance @ 1A (Initial):** 8 mΩ max
	6. Low level contact resistance *QTR18012 - EMM Connectors - Low Level Contact Resistance (Initial)*	EIA 364-23C	**Low Level Contact Resistance @ 100 mA (Initial):** 9 mΩ max
	7. Contact engagement and separation forces *QTR18013 - EMM Connectors - Contact Engagement and Separation Forces (Initial)*	EIA-364-37B	**Engagement Force:** 1 N max **Separation Force:** 0.15 N min
	8. Mating and unmating force *QTR18014 - EMM Connectors - Mating Unmating Forces (Initial)*	EIA-364-13D	**Mating Force (Initial):** 1.7 N max **Unmating Force (Initial):** 0.1 N min
	9. Temperature cycling *QTR18015 - EMM Connectors - Temperature Cycling (-65°C to +260°C)*	EIA-364-32D Condition 1	**Temperature cycling severity:** Five cycles -65°C (30min) / +260°C (30 min) Temperature max for continuous use : 150°C Temperature max for short terme use (30 min max) : 260°C
	10. Humidity *QTR18016 - EMM Connectors - Humidity (10 days)*	EIA-364-31B Method IV	**Humidity cycling severity:** Ten cycles, cycle duration: 24 hours.
	10.1 Dielectric withstanding voltage sea level *QTR18017 - EMM Connectors - Dielectric Withstanding Voltage (after Humidity)* Performance between contacts	EIA-364-20C	**After Humidity:** **Breakdown Voltage (@ Sea Level):** 1000 V RMS **Dielectric Withstanding Voltage (@ Sea Level):** 750 V RMS **Rated Voltage (@ Sea Level):** 250 V RMS
	10.2 Insulation resistance *QTR18018 - EMM Connectors - Insulation Resistance (after Humidity)*	EIA-364-21C	**After Humidity:** 2 000 GOhm minimum
	11. Vibration *QTR18019 - EMM Connectors - Sinusoidal Vibration*	EIA-364-28E Test Condition III & IV	**Vibration severity:** Sinusoidal Vibration / 20gn (up to 45gn) / 10-2000-10 Hz / 4h per axe (3 axes) With backpotting for Cable version
	12. Shock *QTR18020 - EMM Connectors - Shock*	EIA-364-27B Test Condition G	**Shock severity:** Peak acceleration: 160 g / Normal duration: 6 ms / Waveform: Saw tooth With backpotting for Cable version

1	**13. Durability (500 Cycles)** *QTR18021 - EMM Connectors - Durability (500 Cycles)*	MIL-DTL-83513G §4,5,16	No evidence of physical or mechanical degradation
	13.1 Contact Resistance *QTR18022 - EMM Connectors - Contact Resistance (after Durability)*	EIA-364-06C	**After Durability:** < 10 mOhms
	13.2 Low level contact resistance *QTR18023 - EMM Connectors - Low Level Contact Resistance (after Durability)*	EIA-364-23C	**After Durability:** < 10 mOhms
	13.3 Contact engagement and separation forces *QTR18024 - EMM Connectors - Contact Engagement and Separation Forces (after Durability)*	EIA-364-37B	**After Durability:** Engagement force: 1 N max. Separation force: 0.1 N min per contact
	13.4 Mating and unmating force *QTR18025 - EMM Connectors - Mating and unmating force (after Durability)*	EIA-364-13D	**After Durability:** Mating Force: 1.7 N Max Unmating Force: 0.1 N Max
2	**14. Salt spray (corrosion)** *QTR18026 - EMM Connectors - Salt Spray (96h)*	EIA-364-26B Test Condition A	**Salt Spray severity:** Duration: 96 hours / Temperature: +35 ± 2°C / pH: between 6.5 and 7.2 / Concentration: between 5 ± 1 % of NaCl
	14.1 Contact Resistance *QTR18027 - EMM Connectors - Contact Resistance (after Salt Spray)*	EIA 364-06C	**After Salt Spray (96h):** < 10 mOhms
	14.2 Low level contact resistance *QTR18028 - EMM Connectors - Low level contact resistance (after Salt Spray)*	EIA-364-23C	**After Salt Spray (96h):** < 10 mOhms
	14.3 Mating and unmating force *QTR18029 - EMM Connectors - Mating and unmating force (after Salt Spray)*	EIA-364-13D	**After Salt Spray (96h):** Mating Force: 1.7 N Max Unmating Force: 0.1 N Max
	14.4 Contact Retention *QTR18030 - EMM Connectors - Contact Retention (after Salt Spray)*	EIA-364-29C	**After Salt Spray (96h):** 10 N Min
3	**15. Fluid immersion** *QTR18031 - EMM Connectors - Fluid immersion*	MIL-DTL-83513G §4,5,18	**Fluid tested:** a. Lubricating oil Aircraft turbine engines, synthetic base: 20 hours. b. Coolant-dielectric fluid synthetic silicate ester base lubricant (coolanol 25) 1 hour +/- 1 minute
	15.1 Mating and unmating force *QTR18032 - EMM Connectors - Mating and unmating force (after Fluid Immersion)*	EIA-364-13D	**After Fluid Immersion:** Mating Force: 1.7 N Max Unmating Force: 0.1 N Max
4	**16. Crimp tensile strenght** *QTR18033 - EMM Connectors - Crimp tensile strenght*	EIA-364-08 NASA-STD-8739.4	AWG 24: Required = 35.6 N min / Measured = 49.98 N min AWG 26: Required = 22.3 N min / Measured = 36.64 N min AWG 28: Required = 13.4 N min / Measured = 16.90 N min AWG 30: Required = 6.7 N min / Measured = 11.30 N min
	17. Thermal vacuum outgassing *QTR18034 - EMM Connectors - Thermal vacuum outgassing*	ASTM E595 (ECSS-Q-ST-70-02C)	TML : Required : < 1 % Measured : PEEK = 0.18 % / LCP = 0.06 % / STYCAST 2651 = 0.43 % CVCM : Required : < 0.1 % Measured : PEEK = 0.01 % / LCP = 0.01 % / STYCAST 2651 = 0.01 %

5	**18. Solderability** *QTR18035 - EMM Connectors - Solderability*	MIL STD 202, Method 208 ANSI J-STD-002	Solderability Condition: Solder Bath Temperature = 260°C ± 5°C Dwell time = 5sec ± 0.3sec Solder = SAC305 per 3.1.1 of ANSI J-STD-002 Flux = Standard flux #2 per 3.1.2 of ANSI J-STD-002
	19. Resistance to soldering heat *QTR18036 - EMM Connectors - Resistance to soldering heat*	MIL STD 202, Method 210	Soldering process severity: Bath Solder = 260°C / 10s / 1 cycle Iron Solder = 350°C / 5s / 1 cycle
	19.1 Contact Retention *QTR18037 - EMM Connectors - Contact Retention (after Resistance to soldering heat)*	EIA-364-29C	After Resistance to soldering heat: 10 N Min
	20. Marking performance *QTR18038 - EMM Connectors - Marking performance*	MIL-STD-202, Method 215	Solvent tested: Solvent 1: Isopropyl alcohol, Kerosene (Petroleum ether), Ethylbenzene Solvent 3: Ethanolamine, 1-methoxy-2- propanol, Water Solvent 4: Propylene glycol, Monoethanolamine VIGON A200 & N600
6	**21. Current carrying capacity (Derating)** *QTR18002 - EMM Connectors - Current carrying capacity (Derating)*	IEC 60512-5-2, Test 5b	Basic Curve Results : E221Y30E10 with E222Y30E60: Max current @25°C = 3.4 A / Max current @ 85°C = 2.5 A E222V30E61 with E221Y30E10: Max current @25°C = 3.9 A / Max current @ 85°C = 2.6 A E222V30E61 with E221V30E11: Max current @25°C = 3.8 A / Max current @ 85°C = 2.6 A E222Y30E50 with E221A30E01: Depending on cable / could be up to 5A E222V30E51 with E221A30E01: Depending on cable / could be up to 5.1A <u>For 60 points connectors ask for derating curves</u>
7	**22. Fixing Hardware M2 max torque** *QTR18039 - EMM Connectors - Fixing Hardware M2 max torque*	MO.04-0-16.A	Torque Fixing Recommandation: Between Connector and PCB = 0.3 N.m Between Connectors = 0.2 N.m
8	**24. Radiation Resistance** *QTR18041 - EMM Connectors - Radiation Resistance*	ESCC22900 Iss.5	Radiation Severity: 10 Mrad
	24.1 Insulation Resistance *QTR18041 - EMM Connectors - Radiation Resistance*	EIA-364-21C	Insulation Resistance after Radiation : > 2000 GOhm (@ 500V)
9	**25. Fungus Resistance** *QTR18042 - EMM Connectors - Fungus Resistance*	RTCA DO 160, section 13, category F	Fungus Severity: Incubation time: 28 days, Tp 30±1°C, RH 97±2 % Fungal strains: - Aspergillus niger ATCC 9642 - Aspergillus versicolor ATCC 11730 - Penicillium funiculosum ATCC 11797 - Chaetomium globosum ATCC 6205 - Aspergillus flavus ATCC 9643 Result : Grade 0 or 1