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ITT

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cannon

Cannon Quadrax Contacts



Cannon, VEAM, BIW

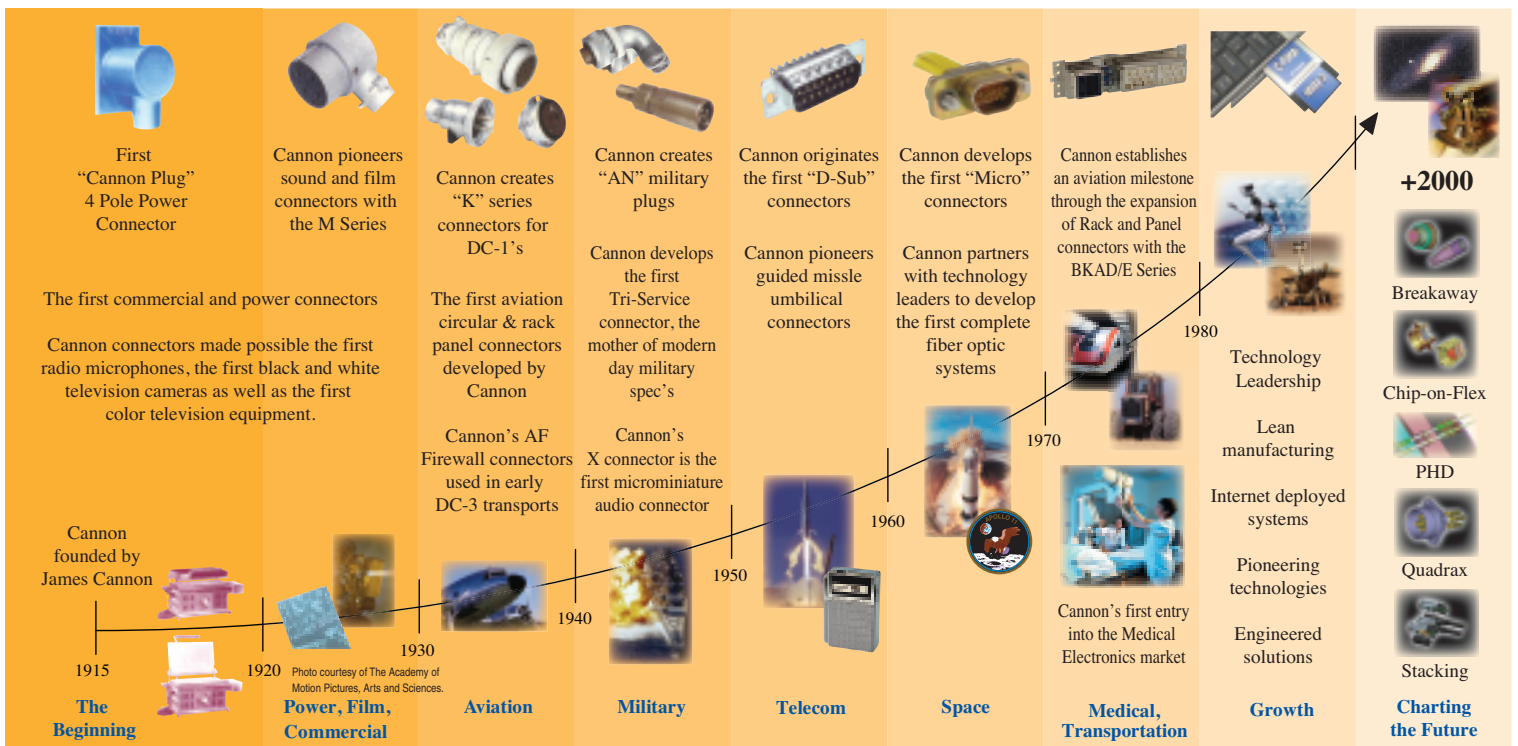
A Historical Achievement of Technology Leadership

Defining and Championing Innovation

Showcasing a portfolio of creativity, ITT's "Engineered For Life" execution embraces products which have become ubiquitous in a broad collection of markets including: Military/Aerospace, Civil Aircraft, Industrial Instrumentation, Medical, Oil & Gas, Energy, Transportation, Telecom/Handset, Computer, Consumer, and Automotive.

ITT's rich interconnect history embraces contributions to both technological breakthroughs and social movements. With one of the industry's broadest product offerings, ITT's interconnect products have supported:

- Every Free World space mission, bringing the universe to our doorstep.
- Motion picture, radio, and television equipment, serving laughter and entertainment to millions.
- Commercial and military communications systems, linking the voices of the world.
- Computerized tools, reshaping the information highway.
- Aircraft, rapid transit, and automobiles, mobilizing our expanding society.
- Oil and natural gas production, powering the world's economies.
- Agricultural equipment, attacking the roots of world hunger.



ITT Interconnect Solutions

ITT Interconnect Solutions is a division of the multi-national ITT Corporation, a \$7.8 billion dollar global enterprise representing the brands Cannon, VEAM, and BIW. Our connector portfolio remains the most extensive in the industry offering the most reliable and cost effective range of interconnect solutions. These innovations have enabled ITT to provide products and technologies to such markets as:

- Automotive
- Computer/Consumer
- Industrial/Instrumentation
- Military/Aerospace
- Oil Fields
- Telecom/Handset
- Transportation

When you specify a Cannon, VEAM or BIW connector, you can rely on a product designed, developed, and manufactured to the highest quality and reliability standards. This tradition of excellence is based on ITT's corporate culture of operating its businesses under the principles of Six Sigma. At ITT, Six Sigma is not just a quality philosophy but a complete corporate culture that drives the entire business. Our Value Based Management and Value Based Product Development systems are two cornerstones that allow for the development of both leadership and product engineering principles, ensuring the correct industry leading products are developed to the accepted market driven lead times. These principles have allowed ITT to become the market leader in all of our business portfolios.

Six Sigma Manufacturing

ITT operates manufacturing facilities in the United States, Germany, Italy, Mexico, China, Japan and the UK, all of which have particular product area strengths allowing ITT to offer a truly global footprint to our customers. Our facilities are world class and accommodate full vertical integration utilizing the latest manufacturing technologies including: automated and robotic machining centers, Super Market manufacturing cells, Kanban pull systems, and automated electrical, mechanical, and optical test and inspection equipment. The combination of our manufacturing strength and our

advanced manufacturing facilities allows ITT to offer products at market driven prices. Our capabilities, especially in robotics, computerized precision tooling, Kaizen Project Management, Six Sigma tools, and testing, give ITT the most optimized global manufacturing footprint in the interconnect industry.

The Custom Difference

As the industry leader in harsh environment interconnect applications, ITT's world class engineering teams will work directly with our customers to design and develop cost effective solutions for their applications. In many cases we may modify one of our standard designs to ensure a highly reliable solution where timing is critical. Yet, in those cases where a complete custom interconnect solution is required, ITT will work with our customer's Engineers to design an interconnect solution which will be cost effective yet highly reliable. As professional consultants, our Engineering teams will provide a thorough systems and mechanical analysis of any proposed solution. These analyses provide our customers with sophisticated electrical signal and mechanical characterizations to determine the best solution for their application.

RoHS Compliance Information

ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon, VEAM, and BIW connector product portfolios to meet the requirements of European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances initiative. As appropriate, specific Cannon, VEAM, and BIW products may be ordered with an R prefix number which insures our customers will receive RoHS compliant parts for their commercial electronics applications and equipment. Since most RoHS hazardous substances center around specific metal plating and lead solder coatings, ITT's products for RoHS compliance are available in the following plating finishes: electroless nickel, stainless steel, Anodize over aluminum and Gold plating. It should be noted that gold plating would be recommended as the replacement for tin-lead solder when ordering board mount connectors.



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Cannon Quadrax Overview Guide

| Quadrax Specifications | BKAD/E/F ARINC 600 | KJAQ 38999-Style |
|---------------------------|---|---|
| |  |  |
| Size | Size 5 & 8 | Size 8 |
| Current Rating | see ARINC 600 | see ARINC 600 |
| Contact Resistance | see ARINC 600 | see ARINC 600 |
| Contact Material | Copper Alloy | Copper Alloy |
| Shell Material | Copper Alloy | Copper Alloy |
| Platings | Gold over Nickel | Gold over Nickel |
| Termination Type | P.C. Solder & Crimp | P.C. Solder & Crimp |
| Gender | Pin/Receptacle Socket/Plug | Pin & Socket in Either Housing |



Interconnect Solutions for Aircraft Data Network Systems

ITT now offers interconnect solutions for the commercial avionics ARINC 664 Ethernet LAN installations, either 10BASE-T or 100BASE-TX.

ITT's offering includes a multi-pin Cannon Quadrax contact for use in ARINC 600, ARINC 404, and 38999-Style Series III connectors. The Quadrax contact, designed to ARINC 600 requirements, is a size 8 multi-pin contact providing four signal pins to yield a single Ethernet port. The details of the size 8 Quadrax contact are defined in Attachment 20 to ARINC Specification 600. Since the Quadrax contact must be keyed within the connector insert, it requires Ethernet application specific inserts. The crimp version of the size 8 Quadrax contact terminates a 100-ohm, "Star Quad" cable. Guidelines for the cable characteristics and insert arrangements utilizing the size 8 quadrax contacts are defined also in the ARINC Specification 600.



In addition, ITT has developed a size 5 "Quadrax" contact for use in ARINC 404 and MIL-C-81659 connectors. This contact terminates the same "Star Quad" cable as the size 8 "Quadrax" contact and its use requires modification to any standard insert containing size 5 contact cavities.



In addition, ITT has developed a size 5 "Quadrax" contact for use in ARINC 404 and MIL-C-81659 connectors. This contact terminates the same "Star Quad" cable as the size 8 "Quadrax" contact and its use requires modification to any standard insert containing size 5 contact cavities.



For a detailed overview of Quadrax technology, please refer to the Interconnect Solutions White Paper titled "Quadrax Technology White Paper," available for download on our website, www.ittcannon.com.

Electrical Performance (Typical)

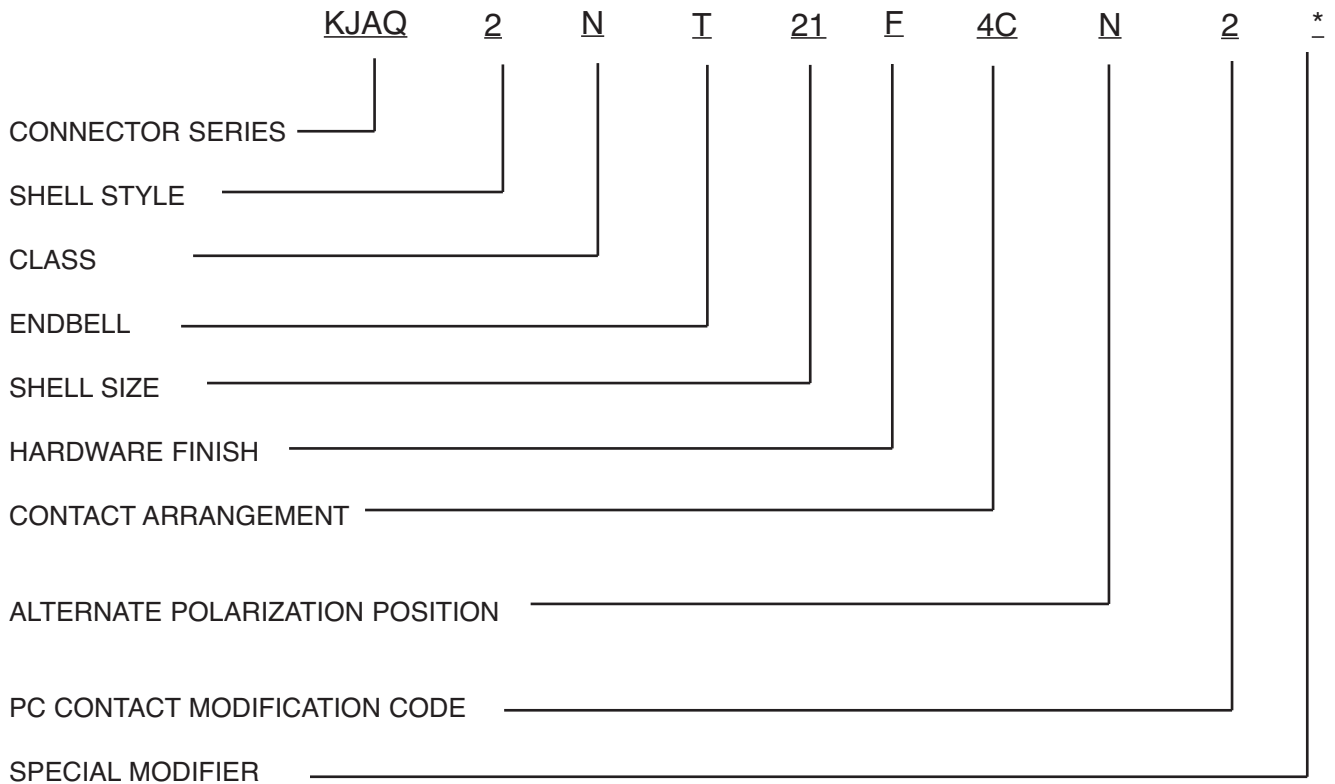
| Attenuation (Maximum) | |
|-----------------------|------------------|
| Frequency (MHz) | Attenuation (dB) |
| 1.00 | 0.01 |
| 4.00 | 0.03 |
| 10.00 | 0.03 |
| 16.00 | 0.03 |
| 20.00 | 0.03 |
| 32.25 | 0.04 |
| 32.50 | 0.10 |
| 100.00 | 0.30 |

| Cross Talk (NEXT) Minimum | |
|---------------------------|------------------|
| Frequency (MHz) | Attenuation (dB) |
| 1.00 | 65 |
| 4.00 | 65 |
| 10.00 | 60 |
| 16.00 | 56 |
| 20.00 | 54 |
| 32.25 | 50 |
| 32.50 | 44 |
| 100.00 | 40 |

| Return Loss (Minimum) | |
|-----------------------|------------------|
| Frequency (MHz) | Attenuation (dB) |
| 1.00 | 23 |
| 4.00 | 23 |
| 10.00 | 23 |
| 16.00 | 23 |
| 20.00 | 14 |
| 32.25 | 14 |
| 32.50 | 14 |
| 100.00 | 14 |



How to Order Circular Connectors



CONNECTOR SERIES
 KJAQ D38999-Style Quadrax Connector

- SHELL STYLE**
- 0 - Wall mount receptacle with rear thread; accommodates rear release, rear removable crimp pin quadrax contacts
 - 2 - Box mount receptacle without rear thread; accommodates front release, front removable PC pin quadrax contacts
 - 4 - Jam Nut Receptacle without rear thread, accommodates front release, front removable PC pin quadrax contacts
 - 6 - Straight plug accommodates rear release, rear removable crimp socket quadrax contacts
 - 7 - Jam nut receptacle with rear thread; accommodates rear release, rear removable crimp pin quadrax contacts

CLASS
 N - Non-Environmental

ENDBELL
 T - No Rear Accessory

SHELL SIZE
 38999-Style Series III Connectors

- HARDWARE FINISH**
- F - Selective Electroless Nickel over Electroless Silver
 - W - Olive drab cadmium over Electroless Nickel
 - R - RoHS Compliant

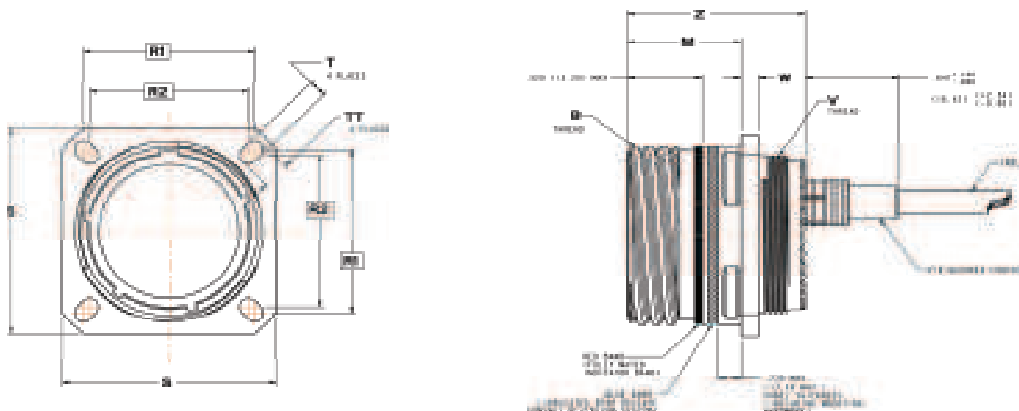
- CONTACT ARRANGEMENT**
- 1C - Single quadrax (size 9)
 - 2C - Two quadrax (size 17)
 - 4C - Four quadrax (size 21)
 - 6C - Six quadrax (size 23)
 - 8C - Eight quadrax (size 25)

ALTERNATE POLARIZATION POSITION
 N (Normal), A, B, C, D, E 38999-Style Series III connectors

- PC CONTACT MODIFICATION CODE**
- 1 - .150 solder post extension
 - 2 - .250 solder post extension

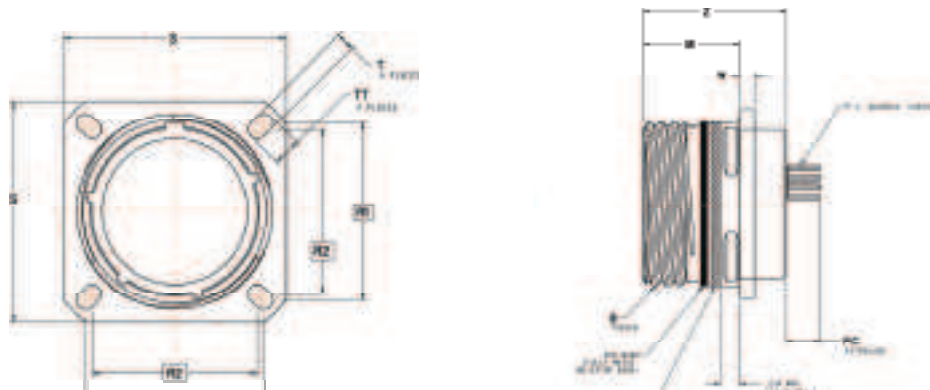
SPECIAL MODIFIER
 L - less contacts (L is not marked on connector)

KJAQ0 Wall Mounting Receptacle



| Size | MS Shell Size Code | B Class -2A Blunt Start (Plated) | M +.000 (+.000) -.005 (-.130) | R1 | R2 | S ±.012 ±(.300) | T +.004 (.100) -.002 (.050) | TT +.004 (.100) -.002 (.050) | V Thread Metric Thread (Plated) | W Max | Z +.005 (.130) -.010 (.250) |
|------|--------------------------|---|-------------------------------------|------------------|------------------|-----------------------|-----------------------------------|------------------------------------|---------------------------------------|----------------|-----------------------------------|
| 9 | A | .6250-0.1P-0. 3L-TS | .820 (20.83) | .719 (18.26) | .594 (15.09) | .938 (23.83) | .128 (3.25) | .216 (5.49) | M12X1-6g 0.100 R | .098 (2.50) | 1.235 (31.36) |
| 17 | E | 1.1875-0. 1P-0. 3L-TS | .820 (20.83) | 1.062 (26.97) | .969 (24.61) | 1.312 (33.32) | .128 (3.25) | .194 (4.93) | M25X1-6g 0.100R | .098 (2.50) | 1.235 (31.36) |
| 21 | G | 1.3750-0. 1P-0. 3L-TS | .790 (20.07) | 1.250 (31.75) | 1.156 (29.36) | 1.562 (39.67) | .128 (3.25) | .194 (4.93) | M31X1-6g 0.100R | .126 (3.20) | 1.235 (31.36) |
| 23 | H | 1.5000-0. 1P-0. 3L-TS | .790 (20.07) | 1.375 (34.92) | 1.250 (31.75) | 1.688 (42.88) | .154 (3.91) | .242 (6.15) | M34X1-6g 0.100R | .126 (3.20) | 1.235 (31.36) |
| 25 | J | 1.6250-0.1P-0. 3L-TS | .790 (20.07) | 1.500 (38.10) | 1.375 (34.92) | 1.812 (46.02) | .154 (3.91) | .242 (6.15) | M37X1-6g 0.100R | .126 (3.20) | 1.235 (31.36) |

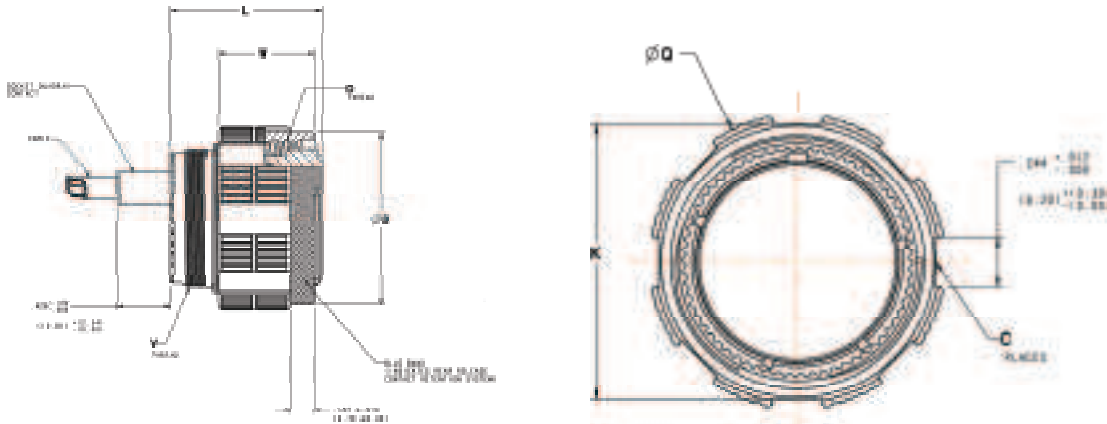
KJAQ2 Box Mounting Receptacle (No Rear Threads)



| Size | MS Shell Size Code | B Class -2A Blunt Start (Plated) | M +.000 (+.000) -.005 (-.130) | R1 | R2 | S ±.012 ±(.300) | T +.004 (.100) -.002 (.050) | TT +.004 (.100) -.002 (.050) | W Max | Z +.005 (.130) -.010 (.250) | P.C. EXT Contact Part No. 224-007-000 | P.C. EXT Contact Part No. 224-007-012 |
|------|--------------------------|---|-------------------------------------|------------------|------------------|-----------------------|-----------------------------------|------------------------------------|----------------|-----------------------------------|---|---|
| 9 | A | .6250-0.1P-0. 3L-TS | .820 (20.83) | .719 (18.26) | .594 (15.09) | .938 (23.83) | .128 (3.25) | .216 (5.49) | .098 (2.50) | 1.235 (31.36) | .300 (7.62) .250 (6.35) | .200 (5.08) .150 (3.81) |
| 17 | E | 1.1875-0. 1P-0. 3L-TS | .820 (20.83) | 1.062 (26.97) | .969 (24.61) | 1.312 (33.32) | .128 (3.25) | .194 (4.93) | .098 (2.50) | 1.235 (31.36) | | |
| 21 | G | 1.3750-0. 1P-0. 3L-TS | .790 (20.07) | 1.250 (31.75) | 1.156 (29.36) | 1.562 (39.67) | .128 (3.25) | .194 (4.93) | .126 (3.20) | 1.235 (31.36) | | |
| 23 | H | 1.5000-0. 1P-0. 3L-TS | .790 (20.07) | 1.375 (34.92) | 1.250 (31.75) | 1.688 (42.88) | .154 (3.91) | .242 (6.15) | .126 (3.20) | 1.235 (31.36) | | |
| 25 | J | 1.6250-0.1P-0. 3L-TS | .790 (20.07) | 1.500 (38.10) | 1.375 (34.92) | 1.812 (46.02) | .154 (3.91) | .242 (6.15) | .126 (3.20) | 1.235 (31.36) | | |

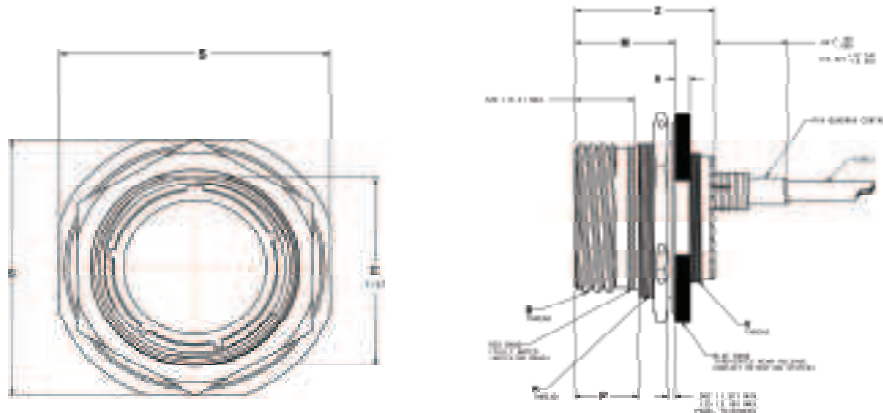


KJAQ6 Straight Plug



| Size | MS Shell Size Code | B +.008 (.200) -.000 (.000) | C Places | D Class -2B Blunt Start (Plated) | K Max | L Max | Q Max | V Thread Metric Thread (Plated) | W +.008 (.200) -.004 (.100) |
|------|--------------------|-----------------------------------|-------------|---|------------------|------------------|------------------|---------------------------------------|-----------------------------------|
| 9 | A | .724 (18.40) | 4 | .6250-0. 1P-0. 3L-TS | .748 (19.00) | 1.234 (31.34) | .859 (21.82) | M12X1-6g 0.100R | .760 (19.30) |
| 17 | E | 1.268 (32.20) | 4 | 1.1875-0. 1P-0. 3L-TS | 1.291 (32.80) | 1.234 (31.34) | 1.391 (35.53) | M25X1-6g 0.100R | .760 (19.30) |
| 21 | G | 1.500 (38.10) | 8 | 1.3750-0. 1P-0. 3L-TS | 1.524 (38.70) | 1.234 (31.34) | 1.625 (41.28) | M31X1-6g 0.100R | .760 (19.30) |
| 23 | H | 1.618 (41.40) | 8 | 1.5000-0. 1P-0. 3L-TS | 1.642 (41.70) | 1.234 (31.34) | 1.750 (44.45) | M34X1-6g 0.100R | .760 (19.30) |
| 25 | J | 1.744 (44.30) | 8 | 1.6250-0. 1P-0. 3L-TS | 1.768 (44.90) | 1.234 (31.34) | 1.875 (47.62) | M37X1-6g 0.100R | .760 (19.30) |

KJAQ7 Jam Nut Receptacle



| Size | MS Shell Size Code | A +.010 (.250) -.005 (.130) | B Class -2A Blunt Start | C | M +.004 (.100) -.010 (.250) (Plated) | P +.005 (.130) -.004 (.100) | S +.016 (.410) -.004 (.100) | R Thread Metric Thread (Plated) | V Thread Metric Thread (Plated) | Z +.005 (.130) -.004 (.100) |
|------|--------------------|-----------------------------------|-------------------------------|------------------|---|-----------------------------------|-----------------------------------|---------------------------------------|---------------------------------------|-----------------------------------|
| 9 | A | .104 (2.64) | .6250-0. 1P-0. 3L-TS | .651 (16.53) | .871 (22.12) | .555 (14.10) | 1.062 (26.97) | M17X1-6g 0.100R | M12X1-6g 0.100R | 1.243 (31.57) |
| 17 | E | .104 (2.64) | 1.1875-0. 1P-0. 3L-TS | 1.187 (30.15) | .878 (22.30) | .563 (14.30) | 1.625 (31.75) | M32X1-6g 0.100R | M25X1-6g 0.100R | 1.243 (31.57) |
| 21 | G | .135 (3.43) | 1.3750-0. 1P-0. 3L-TS | 1.312 (33.32) | .878 (22.30) | .563 (14.30) | 1.938 (49.23) | M38X1-6g 0.100R | M31X1-6g 0.100R | 1.243 (31.57) |
| 23 | H | .135 (3.43) | 1.5000-0. 1P-0. 3L-TS | 1.562 (39.67) | .878 (22.30) | .563 (14.30) | 2.062 (52.37) | M41X1-6g 0.100R | M34X1-6g 0.100R | 1.243 (31.57) |
| 25 | J | .135 (3.43) | 1.6250-0. 1P-0. 3L-TS | 1.687 (42.85) | .878 (22.30) | .563 (14.30) | 2.188 (55.38) | M44X1-6g 0.100R | M37X1-6g 0.100R | 1.243 (31.57) |

Dimensions shown in inch (mm)
Specifications and dimensions subject to change

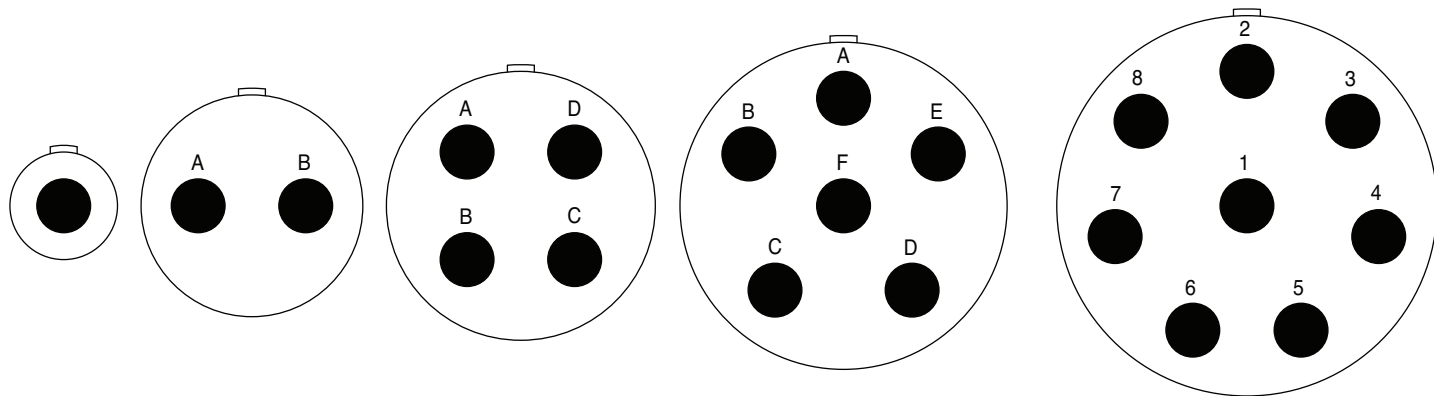
www.ittcannon.com



Insert Arrangements KJAJQ Series

Insert Arrangements (Front View Pin Connector)

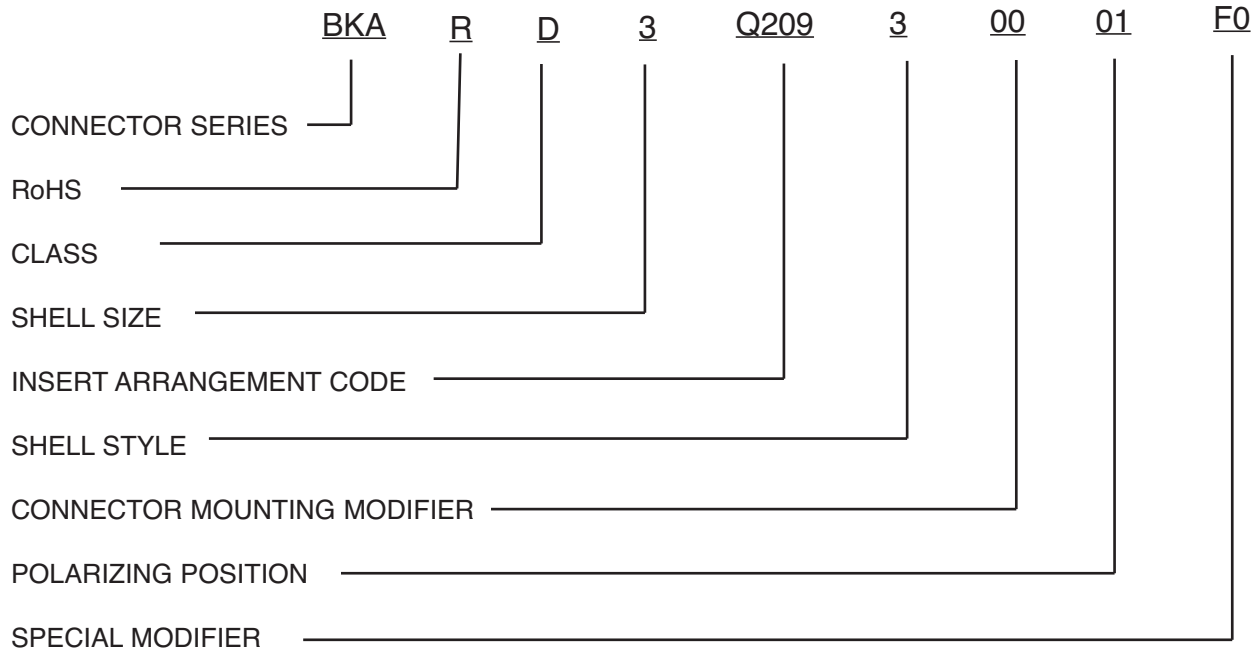
| | | | | |
|---------------|--------------------|--------------------|--------------------|--------------------|
| <u>Size 9</u> | <u>Size 17</u> | <u>Size 21</u> | <u>Size 23</u> | <u>Size 25</u> |
| 1C | 2C | 4C | 6C | 8C |
| 1-Quadrax | 2-Quadrax Contacts | 4-Quadrax Contacts | 6-Quadrax Contacts | 8-Quadrax Contacts |



Notes:

1. All 38999-Style inserts, in both the plug and the receptacle connectors, provide electrical bonding of the cable shield to the housing.
2. 38999-Style inserts are integral part of the shell. Arrangements, other than those shown, are available upon request.
3. All insert arrangements are shown as viewed from the front view pin connector.
4. To minimize contact splay and to assure proper mating, each rear release "Quadrax" pin contact is supplied with a plastic "stabilizer."

How to Order Rack and Panel Connectors



CONNECTOR SERIES
 BKA - Rack and Panel Connector per ARINC 600 Requirements
 (Standard Shell finish: Light Yellow Chromate Conversion)

Class

C Semi-Environmental

Connector contains removable inserts with sealing grommets.
 Inserts accommodate rear-release, rear-removable crimp contacts.
 Plug connector shells are supplied without peripheral o-ring seals.

D Non-Environmental

Connector contains removable inserts without sealing grommets.
 Inserts accommodate rear-release, rear-removable crimp contacts.

E Environmental

Connector contains non-removable inserts with sealing grommets, bonded in the shell.
 Inserts accommodate rear-release, rear-removable crimp contacts.
 Plug connector shells are supplied with peripheral o-ring seals.

F Front Release; Non-Environmental (Receptacle Connectors Only)

Connector contains removable inserts without sealing grommets.
 Insert arrangements accommodate front release, front removable solder post contacts and rear release-rear removable crimp contacts.

X Front Release; Non-Environmental (Receptacle Connectors Only)

Connector contains removable inserts without sealing grommets.

All inserts in the connector accommodate front release, front removable solder post contacts.

NOTE: An "R" after the connector series would mean supplied with RoHS compliant finish.

Shell Size

Size 2 Accommodates Maximum 28 size 8 Quadrax contacts

Size 3 Accommodates Maximum 56 Size 8 Quadrax contacts



| Connector | Shell Cavity Identification | | | | | |
|--|-----------------------------|-----------|-------|-------|-------|------|
| Layout | A | B | C | D | E | F |
| Q035 | 11Q11 | 11Q11 | 13Q2 | | | |
| Q074 | 4W4 | 11Q11 | 59 | | | |
| Q075 | 11Q11 | BLANK | 64Q2 | | | |
| Q086 | 11Q11 | 11Q11 | 64Q2 | | | |
| Q089 | 4W4 | BLANK | 85 | | | |
| Q096 | BLANK | 11Q11 | 85 | | | |
| Q69 | 11Q11 | 24 | 34 | | | |
| Q81 | 11Q11 | 11Q11 | 59 | | | |
| Q107 | 11Q11 | 11Q11 | 85 | | | |
| Q135 | 11Q11 | 24 | 100 | | | |
| Q144 | 120T2 | 11Q11 | 13W2 | | | |
| Q154 | 120T2 | 11Q11 | 13W2 | | | |
| Q174 | 150 | 11Q11 | 13W2 | | | |
| Q198 | 11Q11 | 11Q11 | 13Q2 | 11Q11 | 11Q11 | 13Q2 |
| Q209 | 11Q11 | 11Q11 | BLANK | 11Q11 | 150 | 13Q2 |
| Q225 | 11Q11 | 150 | 64Q2 | | | |
| Q246 | 150 | 11Q11 | 85 | | | |
| Q253 | 120T2 | 120T2 | 13WQ2 | | | |
| Q253 | 150 | 121 | 13W2 | 11Q11 | 24 | 34 |
| Q261 | 4W4 | 120T2 | BLANK | 4W4 | 120T2 | 13Q2 |
| Q264 | 120T2 | 120T2 | 24Q4 | | | |
| Q274 | 4W4 | 120T2 | 13Q2 | 4W4 | 120T2 | 13Q2 |
| Q307 | 110 | 11Q11 | 6Q6 | 24 | 150 | 6Q6 |
| Q313 | 150 | 150 | 13WQ2 | | | |
| Q324 | 150 | 150 | 24Q4 | | | |
| Q324 | 11Q11 | METAL BLK | BLANK | 150 | 150 | 13Q2 |
| Q435 | 11Q11 | 11Q11 | 13Q2 | 150 | 150 | 100 |
| Q487 | 11Q11 | 150 | 13Q2 | 150 | 150 | 13Q2 |
| Q619 | 150 | 150 | 13Q2 | 150 | 150 | 6T6 |
| Q626 | 150 | 150 | 13Q2 | 150 | 150 | 13Q2 |
| QA096 | 11Q11 | BLANK | 85 | | | |
| QA324 | 11Q11 | METAL BLK | BLANK | 150 | 150 | 13W2 |
| | | | | | | |
| ADDITIONAL DESIGNS AVAILABLE UPON REQUEST | | | | | | |

 Insert Arrangement Code

See ITT Cannon website www.ittcannon.com when new Insert Arrangement code is required. For rack and panel on-line catalog go to literature/literature by product/rack and panel/view PDF.

Q prefix denotes Quadrax contacts and inserts arrangements are used in this connector arrangement. Quadrax contact cavities will accommodate size 8 twinax and coax contacts of a similar type (i.e. front release, front removal or rear release, rear removal types).

For Quadrax contact and cable recommendations see ARINC 600 Specification.

Shell Style

- 3 Plug (Mounts on the Rack)
- 4 Receptacle (Mounts on the LRU)

Connector Mounting Modifier

- 00** Plug and Receptacle Connectors
.148 dia. connector mounting holds (This is a standard configuration)
- 01** Plug and Receptacle Connectors
With #6 (.138)- 32 ESNA clinch nuts (See table for quantities)
- 03** Plug and Receptacle Connectors
With #4 (.112)- 32 ESNA clinch nuts (See table for quantities)
- 08** Size 2 and 3 Plug and Receptacle Connectors Only
With #4 (.112)- 32 ESNA clinch nuts in all connector mounting holes (See table for quantities)
- 09** Size 2 and 3 Plug and Receptacle Connectors Only
With #6 (.138)- 32 ESNA clinch nuts in all connector mounting holes (See table for quantities)
- 10** Size 2 Plug and Receptacle Connectors Only
With #4 (.112)- 340 ESNA clinch nuts installed in two mounting holes located between shell cavities "B" and "C"
- 11** Receptacle Connectors Only
With #6 (.138)- 32 ESNA clinch nuts installed in two mounting holes located between shell cavities "B" and "C"
- 12** Size 2 Plug and Receptacle Connectors Only
With six #4 (.112) clinch nuts (PEM #KFS2-440)
- 15** Plug and Receptacle Only
With four #6 (.138)- 32 clinch nuts per MIL-N-45938/7 and clear cadmium shell finish
- 17** Receptacle Connectors Only
Standard configuration with .0008-.0012 thick nickel plated shell
- 21** Plug and Receptacle Connectors
Standard Configuration with clear cadmium over nickel plated shells
- 22** Plug Connectors Only
Standard Configuration with .0008-.0012 thick nickel plated shell
The shell is provided with with an EMI/Grounding spring.
Metallic inserts, if supplied, are selectively plated- I.D. Silver; O.D Nickel over Silver.
The contact retaining/grounding clips are gold plated.

Insert Arrangement Code

Connector Mounting Modifier (continued)

- 23** Plug and Receptacle Connectors
With floating eyelets (.048 min. radial float) in four corner connector mounting holes
- 24** Plug Connectors Only
With #4 (.112)- 32 ESNA clinch nuts (See table for quantities)
- 26** Receptacle Connectors Only
Standard Configuration with .0008-.0012 thick nickel plated shell.
Non-environmental inserts- BKAD
- 29** Applies to both Plug and Receptacle meeting the definitions of the 22 and 17 mode codes.
All mounting holes shall have #6-32 clinch nuts installed.
- 33** Plug Connectors Only
Standard Configuration with .0008-.0012 thick nickel plated shells, but without
EMI/Grounding springs
- 34** Plug Connectors Only
Standard Configuration with .0008-.0012 thick nickel plated shells, but without
EMI/Grounding springs and #6-32 clinch nuts installed as in mod code -01.
- 37** Plug Connectors Only
With metric clinch nuts M3.5X6 (See table quantities)
- 38** Plug Connectors Only
With metric clinch nuts M3.5X6 (See table quantities) and with .0008- .0012 thick nickel
plated shell. The shell is provided with an EMI/Grounding spring. Metallic inserts, if
supplied, are selectively plated- I.D. Silver; O.D. Nickel over Silver. The contact
retaining/grounding clips are gold plated.
- 41** Plug Connectors Only is the -22 mod code (nickel plated with EMI springs) and #6-32 clinch
nuts ESNA type same as standard mod code -01.
- 43** Plug Connectors Only is the -22 mod code (nickel plated with EMI springs) and #4-40 clinch
nuts ESNA type same as standard mod code -03.

| Mounting Modifier | Shell Size | Quantity of Clinch Nuts | |
|----------------------|---------------|-------------------------|----------------------|
| | | Plug Connector | Receptacle Connector |
| 01, 03, 24, 37, 38 | 2 | 4 | 6 |
| | 3 | 8 | 10 |
| 08, 09 | 2 | 8 | 10 |
| | 3 | 12 | 14 |

Insert Arrangement Code

Polarizing Positions

- Blank** Polarizing hardware is supplied with the connector, but is not installed.
- 00** Polarizing hardware is not supplied with the connector.
- 01-216** Polarizing hardware is installed in positions per ARINC 600.

Special Modifier

- Blank** Connector is supplied with full complement of power and signal crimp contacts. Quadrax, triax, twinax, and coax contacts are purchased separately.
- F0** Connector is supplied without contacts (**F0** is not marked on the connector)
- F00** Connector is supplied without contacts and without waveguide (**F00** is not marked on the connector)

| | Solder Post Dia. | Solder Post Extension | Size 22 Contact Part Number | |
|-----------|---------------------|--------------------------|-----------------------------|----------------|
| | | | Receptacle Connector | Plug Connector |
| SA | 0.025 | .150 | 031-1352-000 | 030-3288-000 |
| SB | 0.025 | .250 | 031-1352-001 | 030-3288-003 |
| SC | 0.025 | .375 | 031-1352-002 | 030-3288-004 |
| SD | 0.025 | .500 | 031-1352-003 | 030-3288-005 |

- W*** Connector is supplied with full complement of signal (size 22) and power contacts per ARINC 600. Signal contacts are front release, front removable with wrap post termination installed in the connector. Power contacts are rear release, rear removable with crimp termination supplied uninstalled.

| | Wrap Post Square | Wrap Post Extension | Size 22 Contact Part Number | |
|-----------|---------------------|------------------------|-----------------------------|----------------|
| | | | Receptacle Connector | Plug Connector |
| WA | 0.025 | .250 | 031-1351-000 | 030-3310-000 |
| WB | 0.025 | .375 | 031-1351-001 | 030-3310-001 |
| WC | 0.025 | .500 | 031-1351-002 | 030-3310-002 |

Note: For ARINC 404 connectors due to the lack of industry standards governing the use of Quadrax contacts, unique part numbers will be assigned for each customer application until such time that a mutually accepted standard is adopted.

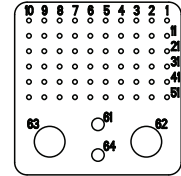
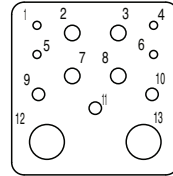
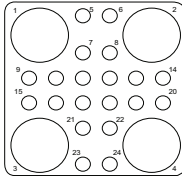
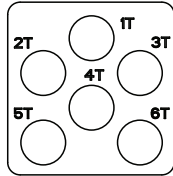
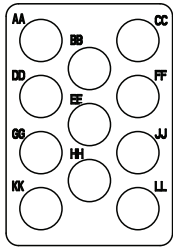


Insert Arrangements

Insert Arrangements – the following inserts are currently available

ARINC 600 (BKA)

| | | | | |
|---------------------|--------------------|--------------------|--------------------|--------------------|
| 11Q11 | 6Q6 | 24T4 | 13Q2 | 64Q2 |
| Metallic | Metallic | 4 Quadrax Contacts | 2 Quadrax Contacts | 2 Quadrax Contacts |
| 11 Quadrax Contacts | 6 Quadrax Contacts | 20 #20 Contacts | 4 #20HD Contacts | 60 #22 Contacts |
| | | | 3 #16 Contacts | 2 #16 Contacts |
| | | | 4 #12 Contacts | |

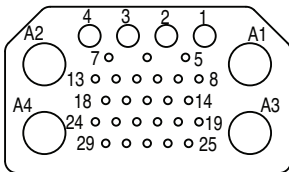


PIN FRONT
ENGAGING FACE

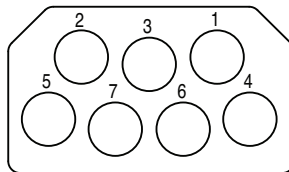
Note: Other ARINC Layouts under development. Consult factory for further details.

ARINC 404, MIL-C-81659 (DPX)

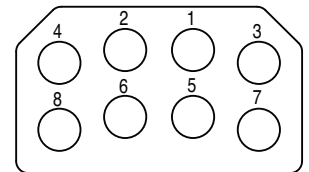
| | | |
|-------------------------|-------------------------|-------------------------|
| 33Q4M | 7Q7 | 8Q8 |
| (4) #5 Quadrax Contacts | (7) #8 Quadrax Contacts | (8) #5 Quadrax Contacts |
| 25 #20HD Contacts | | |
| 4 #16 contacts | | |



PIN FRONT
ENGAGING FACE



PIN FRONT
ENGAGING FACE



PIN FRONT
ENGAGING FACE



Contact Data

| Size 8 Quadrax – ARINC 600, ARINC 404, MIL-C-81659, 38999-Style | | | |
|---|--------|--------------|---|
| Termination Type | Gender | Part Number | Type |
| Crimp*** | Pin | 224-0007-004 | Rear Release/Rear Removable (RR-RR) |
| Crimp*** | Socket | 244-0011-000 | Rear Release/Rear Removable (RR-RR) |
| Solder (PCB) | Pin | 224-0007-000 | Front Release/Front Removable* (FR-FR) |
| Solder (PCB) | Pin | 224-0007-012 | Front Release/Front Removable** (FR-FR) |

* .250 solder extension

** .150 solder post extension

*** These contacts are designed to terminate 100 Ohm star Quad 24 AWG 100 Base-T Ethernet Cable with a max OD of .182. For other cable configurations consult factory.

Other PCB Solder configurations have been developed. Please contact Customer Service for further details.

| Size 5 Quadrax – ARINC 404, MIL-C-81659 (33Q4M & 8Q8) | | | |
|---|--------|--------------|-------------------------------|
| Termination Type | Gender | Part Number | Type |
| Crimp (Cable) | Pin | 224-0007-005 | Rear Release/Rear Removable |
| Crimp (Cable) | Socket | 244-0011-001 | Rear Release/Rear Removable |
| Solder (PWB) | Pin | 224-0007-000 | Front Release/Front Removable |

| Crimping Tools | | |
|----------------|-------------|--------------------|
| | Tool Handle | Die Set/Positioner |
| Center Contact | M22520/5-01 | M22510/2-37 |
| Outer Body | M22520/5-01 | M2252505-5-45A |

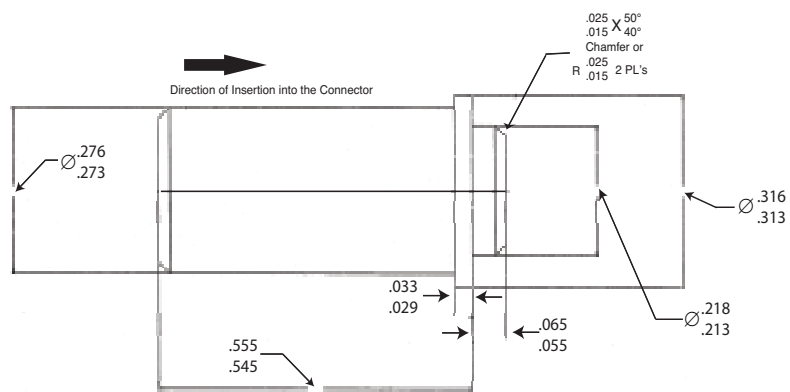
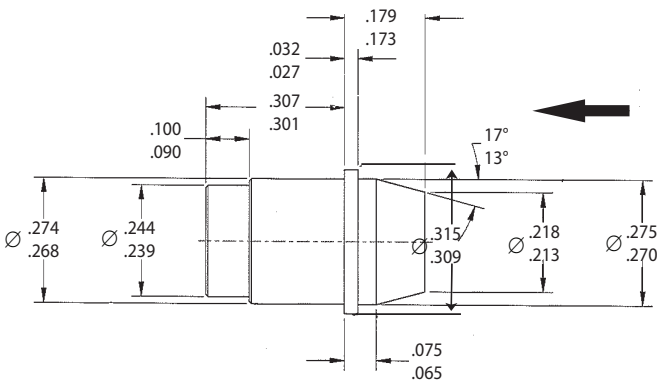
| Insertion / Removal Tools | | | | |
|---------------------------|-------|--------------|--------------|----------------------------------|
| Termination Type | Type | Contact Size | Insertion | Removal |
| Crimp (Cable) | RR-RR | 8 | None | Cannon Plastic Tool 323-7004-001 |
| Crimp (Cable) | RR-RR | 5 | None | Cannon Plastic Tool 323-7011-000 |
| Solder (PCB) | RR-RR | 8 | CIET 70369-8 | CIET 70369-8 |

Filler Plug (for pin or socket crimp contacts)

Size 8, Aluminum Alloy with Nickel plating

For FR-FR Contacts Part Number 225-1065-001

For RR-RR Contacts Part Number 225-1066-000



Dimensions shown in inch (mm)
Specifications and dimensions subject to change

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1. MATERIAL CONTENT AND PHYSICAL FORM

Electrical connectors do not usually contain hazardous materials. They contain conducting and non-conducting materials and can be divided into two groups.

a) Printed circuit types and low cost audio types which employ all plastic insulators and casings.

b) Rugged, Fire Barrier and High Reliability types with metal casings and either natural rubber, synthetic rubber, plastic or glass insulating materials. Contact materials vary with type of connector and also application and are usually manufactured from either: Copper, copper alloys, nickel, alumel, chromel or steel. In special applications, other alloys may be specified.

2. FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD

There is no fire hazard when the connector is correctly wired and used within the specified parameters. Incorrect wiring or assembly of the connector or careless use of metal tools or conductive fluids, or transit damage to any of the component parts may cause electric shock or burns. Live circuits must not be broken by separating mated connectors as this may cause arcing, ionization and burning. Heat dissipation is greater at maximum resistance in a circuit. Hot spots may occur when resistance is raised locally by damage, e.g. cracked or deformed contacts, broken strands of wire. Local overheating may also result from the use of the incorrect application tools or from poor quality soldering or slack screw terminals. Overheating may occur if the ratings in the product Data Sheet/Catalog are exceeded and can cause breakdown of insulation and hence electric shock. If heating is allowed to continue it intensifies by further increasing the local resistance through loss of temper of spring contacts, formation of oxide film on contacts and wires and leakage currents through carbonization of insulation and tracking paths. Fire can then result in the presence of combustible materials and this may release noxious fumes. Overheating may not be visually apparent. Burns may result from touching overheated components.

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3. HANDLING

Care must be taken to avoid damage to any component parts of electrical connectors during installation and use. Although there are normally no sharp edges, care must be taken when handling certain components to avoid injury to fingers. Electrical connectors may be damaged in transit to the customers, and damage may result in creation of hazards. Products should therefore be examined prior to installation/use and rejected if found to be damaged.

4. DISPOSAL

Incineration of certain materials may release noxious or even toxic fumes.

5. APPLICATION

Connectors with exposed contacts should not be selected for use on the current supply side of an electrical circuit, because an electric shock could result from touching exposed contacts on an unmated connector. Voltages in excess of 30 V ac or 42.5 V dc are potentially hazardous and care should be taken to ensure that such voltages cannot be transmitted in any way to exposed metal parts of the connector body. The connector and wiring should be checked, before making live, to have no damage to metal parts or insulators, no solder blobs, loose strands, conducting lubricants, swarf, or any other undesired conducting particles. Circuit resistance and continuity check should be made to make certain that there are no high resistance joints or spurious conducting paths. Always use the correct application tools as specified in the Data Sheet/Catalog. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

IMPORTANT GENERAL INFORMATION

(i) Air and creepage paths/Operating voltage. The admissible operating voltages depend on the individual applications and the valid national and other applicable safety regulations.

For this reason the air and creepage path data are only reference values. Observe reduction of air and creepage paths due to PC board and/or harnessing.

(ii) Temperature

All information given are temperature limits. The operation temperature depends on the individual application.

(iii) Other important information

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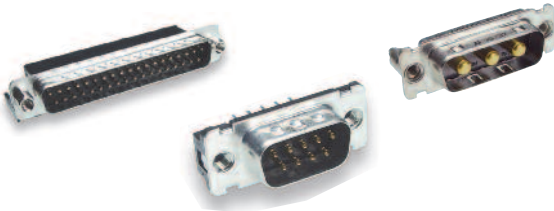
Circular/Filter/Hermetic Connectors

As a world leader in circular, filter, and hermetic connectors, ITT Cannon can leverage its design and manufacturing expertise to fit virtually any application. Our expertise includes fast positive mating for a wide range of military applications, as well as numerous sizes and contact configurations for various harsh environments.



D-Subminiature Connectors

Cannon invented D-sub connectors in 1952. Our family of D-Subs now includes combinations of signal, power and RF, as well as severe service sealed connectors. Cannon D-Subs are available with an extensive line of backshells and accessories and are one of the most economical shielded connector solutions available.



Fiber Optic Connectors and Cable Assemblies

Cannon fiber optic solutions provide an excellent performance/cost value. Performance may be tailored to the end system, with our use of superior materials and bonding agents providing highly effective solutions. Our wide variety of products include fiber optic hybrid contacts, multi-channel, rack and panel and hi-rel assemblies.



Microminiature Connectors

Developed first by Cannon in the 1960s, Microminiature Connectors offer high performance and reliability with exceptional versatility. Available in rectangular, circular and strip-style configurations for countless applications, many of our highly engineered Microminiature connector products meet critical customer demands in multiple applications across the Aerospace & Defense industry.



Rack and Panel Connectors

Pioneered by Cannon during the 1930s, our Rack & Panel Connectors offer an unmatched variety of shell configurations and insert arrangements, as well as materials, plating and contact options. Today, we are recognized as an industry leader, offering an unparalleled range of off-the-shelf and custom Rack & Panel products to align with customer needs.



RF Connectors

ITT Cannon has been providing interconnect products to the Microwave and RF industry since 1963 (formerly The Sealectro Corporation). The RF 50 & 75 Ohm product lines cover UHF band through Ku band requirements. These connectors and cable assemblies are available with a thread type, snap type, bayonet type or slide on coupling method. The frequencies range from DC to 18+ GHz.



ITT Cannon is a leading global manufacturer of connector products serving international customers in the aerospace and defense, medical, energy, transportation and industrial end markets. Whether delivering critical specs to aircraft pilots, streaming data through communications satellites or enabling ultrasound technology that gives an expectant mother the first glimpse of her unborn child, Cannon connects the world's most important information with the people who need it. **To learn more, visit www.ittcannon.com**





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