cannon

D38999-Style Connectors & Termini for Ethernet and High-Speed Data

KJ Series with 100 Mbs - 10 Gbs Catalog

ITT

Amazing things happen

when great things connect

More than a Century of Connections

Since 1915, ITT's Cannon brand has designed connectors for a history of "firsts." From the first "talking" movie to the first man on the moon, we've set the standard for reliable, high-performance interconnects that transfer high-speed data, power and signal in the most demanding applications and harshest environments. Today we proudly continue our legacy of innovation with custom and off-the-shelf interconnect solutions for valued customers and distribution partners around the globe. Our goal is to connect the world and inspire the successes of the next century–because at ITT Cannon, amazing things happen when great things connect.

The Cannon Difference

- Proven engineering, design & manufacturing capabilities
- Global product reach with local customer support
- Unrivaled customization experience
- A committed innovator & business partner

About ITT

ITT is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for the energy, transportation and industrial markets. Building on its heritage of innovation, ITT partners with its customers to deliver enduring solutions to the key industries that underpin our modern way of life. ITT is headquartered in Stamford, CT, with employees in more than 35 countries and sales in approximately 125 countries. For more information, visit itt.com.

Table of Contents

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

cannon

An Introduction to High-Speed Data Solutions

Standard-based high-speed data networks have become ubiquitous in today's world, and the aviation domain is no exception. But connecting devices in the harsh airborne environment brings requirements which cannot be met by common connector types. For example, a typical Ethernet network installation uses very low cost, plastic RJ45 connectors. These connectors are not designed to withstand extreme shock and vibration. Furthermore, the RJ45 connectors typically do not accommodate the shielded network cables which are common in aviation. With the advent of ARINC 664, which defines and Ethernet data network for aircraft installations, a need arose to develop an airborne quality contact system for use in ARINC 600 Rack & Panel connectors as well as 38999-style connectors.

As a result of ARINC activities involving many connector companies, a standard evolved defining the geometry and requirements for size 8 Quadrax contacts. The details of the size 8 Quadrax contacts and the performance requirements are defined in ARINC Specification 600. ITT Cannon's solution is based on ARINC 600 design and performance specifications.

In addition to Quadrax contact solutions, prerequisites for increased data rates in aircraft are resulting in new types of cable and contacts that can achieve higher data transfer rates. New Cat 6A and Cat 7 cable, with four shielded twisted wire pairs, is making it possible to bring 10 Gbps Ethernet networks on board for the first time.

But in addition to high quality cable, these network speeds also demand high performance contacts, in order to carry the required data rates without errors. This is particularly important in Ethernet systems where error checking protocols can significantly slow down system speeds when data is lost and it must be re-sent.

Our new OctoGig and OctoRax contacts and connector systems provide the ideal solutions for these new high speed networks.

OctoRax is the ultimate solution for high speed networks, in the smallest and lightest package possible. With an extremely high density design, Octorax provides eight impedance matched contacts in the same space used by a size 8 Quadrax contact.

OctoGig is an easy-to-install solution. Utilizing standard size 22 contacts and termination techniques, OctoGig's unique design provides high-speed performance in an package that can be easily field terminated and installed.

These new data termini provide a complete solution for current and evolving High-Speed data requirements.

High Speed Integration into Cannon's Diverse Portfolio of Interconnects

BKA /SGA ARINC 600
Rack & Panel

DPX ARINC 404
Rack & Panel

D38999 Style KJAQ and KJBQ with
Quadrax Contacts

KJB 38999-Style with OctoGig™
10 Gb Contacts

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

High-Speed Data Protocols

Common Types, Standards and Data Rates

High Speed Connection Type	Technology	Standard	Data Rate	Notes / aka
Local Area Network	Ethernet	10BASE-T	10 Mbps	
Local Area Network	AFDX	ARINC 664, Part 7	100 Mbps	Avionics Full-Duplex Switched Ethernet
Local Area Network	Ethernet	1000BASE-T	1 Gbps	
Local Area Network	Ethernet	10GBASE-T	10 Gbps	
Local Area Network	Ethernet	25GBASE-T	25 Gbps	
Local Area Network	Ethernet	40GBASE-T	40 Gbps	
Peripherals	USB	USB 2.0	480 Mbps	High Speed USB
Peripherals	USB	USB 3.2 Gen 1 USB 3.1 Gen 1 USB 3.0	5 Gbps	SuperSpeed USB
Peripherals	USB	USB 3.2 Gen 2 USB 3.1 Gen 2	10 Gbps	SuperSpeed USB 10Gbs
Peripherals	USB	USB 3.2 Gen 2x2 USB 3.2	20 Gbps	SuperSpeed USB 20Gps
Peripherals	USB	USB4 Gen 2x2	20 Gbps	USB4™ 20Gbps and Thunderbolt™ 3
Peripherals	USB	USB4 Gen 3x2	40 Gbps	USB4™ 40Gbps and Thunderbolt™ 3
Peripherals	Thunderbolt	Thunderbolt 1	2 x 10 Gbps	2560x1600 video
Peripherals	Thunderbolt	Thunderbolt 2	20 Gbps	DisplayPort 1.2 support, 4K video
Peripherals	Thunderbolt	Thunderbolt 3	40 Gbps	DisplayPort 1.4 support, 2 x 4K video
Peripherals	Firewire 400	IEEE 1394a	393 Mbps	Firewire S400, i.LINK
Peripherals	Firewire 800	IEEE 1394b	786 Mbps	Firewire S800
Storage	eSATA	SATA Rev 2	3 Gbps	SATA 300
Storage	eSATA	SATA Rev 3	6 Gbps	SATA 600
Video	DisplayPort	DisplayPort 1.1	8.64 Gbps	Up to 4K @ 30 Hz
Video	DisplayPort	DisplayPort 1.2	17.28 Gbps	Up to 4K @ 60 Hz
Video	DisplayPort	DisplayPort 1.4	25.92 Gbps	Up to 8K @ 60 Hz + HDR
Video	DisplayPort	DisplayPort 2.0	77.4 Gbps	Up to 16K @ 60 Hz + HDR
Video	HDMI	HDMI 1.4-1.4b	8.16 Gbps	Up to 4K @ 30 Hz
Video	HDMI	HDMI 2.0-2.0b	14.4 Gbps	Up to 4K @ 60 Hz + HDR
Video	HDMI	HDMI 2.1	42.6 Gbps	Up to 8K @ 120 Hz + Dynamic HDR
Video	DVI	DVI-D Single Link	3.96 Gbps	Up to 1920 × 1200 @ 60 Hz
Video	DVI	DVI-D Dual Link	7.92 Gbps	Up to 2560 × 1600 @ 60 Hz

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

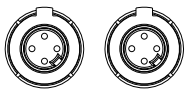
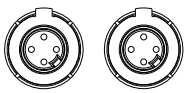
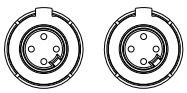
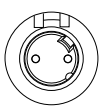
cannon

High-Speed Selection Guide

Common Aerospace High Speed Copper Cable Types

Cable Type	Twinax SPE	Quadrax Cat5e	Cat5e	Cat5e	Cat6A	Cat7
Conductors		4	4	8	8	8
Standards / Protocols	1GBase-T1	100Base-T 10Base-T ARINC 629 ARINC 664	100Base-T 10Base-T	1GBASE-T 100BASE-T	10GBASE-T 1GBase-T	10GBASE-T 1GBase-T
Maximum Data Rate	1 Gbps	100 Mbps	100 Mbps	1 Gbps	10 Gbps	10 Gbps
Maximum Length	70m (24 AWG) 50m (26 AWG)	70m (24 AWG) 50m (26 AWG)	100m	100m	100m	100m
Cable Construction	Shielded Twinax	Shielded Quadrax	UTP	UTP	F/UTP, U/FTP	S/FTP, F/FTP
Impedance	100 Ω	100 Ω	100 Ω	100 Ω	100 Ω	100 Ω
Aerospace Applications	Avionics Systems, Instrumentation, Cabin Management, Flight Control, Cockpit Displays, Data Transmission, In-Flight Entertainment, Engine Sensing and Power, Auxiliary Power Units, Propulsion Control, IFE, Wi-Fi Routers, Automotive.					

ITT Cannon Termini

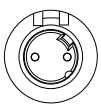
Cable Type	Twinax SPE	Quadrax Cat5e	Cat5e	Cat5e	Cat6A	Cat7
Quadrax						
OctoRax						
OctoGig						
Twinax						

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

Common Aerospace High-Speed Copper Cable Types

Cable Type	USB 2	USB 3	Firewire S400	DVI-D	HDMI 2.0
Conductors	4 or 5	8 to 20	4	8 to 17	15 to19
Standards / Protocols	USB 2.0 USB 1.1	USB 3.2 Gen 2 USB 3.2 Gen 1 USB 3.1 Gen 2 USB 3.1 Gen 1	IEEE 1394b iEEE 1394a	DVI-D Single Link	HDMI 2.0 HDMI 1.4
Maximum Data Rate	480 Mbps	5 Gbps / 10 Gbps	393 Mbps	3.96 Gbps	14.4 Gbps
Maximum Length	5m 30m w/Active Hubs	3m 18m w/Active Hubs	4.5m 72m w/Active Hubs	5m to 15m Depends on Resolution	3m to 15m Depends on Resolution
Cable Construction	UTP + Power	STP + UTP + Power	UTP or STP	STP	STP + Singles
Impedance	90 Ω	90 Ω	110 Ω	100 Ω	100 Ω
Aerospace Applications	IFE, Server to Seat, Content Loading, Cabin Management, Digital Video Systems, Portable Electronics		Avionics Systems, Instrumentation, Flight Control, Video Systems, Sensors	IFE, Cockpit Displays, Flight Management Systems, Mapping Systems, Flight Crew Workstations	Glass Cockpits, Digital Video Systems, IFE, Mapping Systems, Flight Management Systems, Portable Electronics

ITT Cannon Termini

ITT Cannon Termini	SPE	USB 2	USB 3	Firewire S400	DVI-D	HDMI 2.0
Quadrax						
OctoRax						
OctoGig						
Twinax						

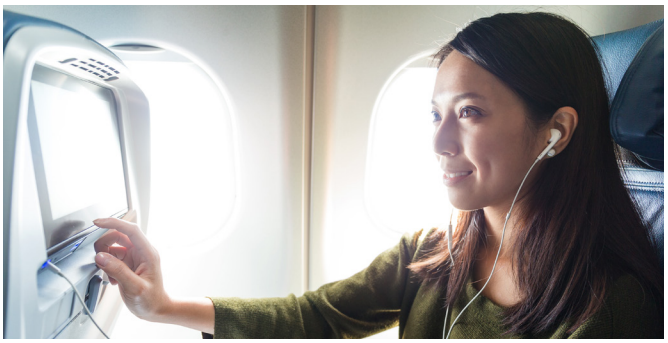
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

cannon

ITT Cannon High-Speed Termini

Data and signal transfer in aerospace and defense applications is moving faster than ever before. From high-fidelity IFE applications on modern commercial airliners, to the growing number of sensors used to collect and process data on military aircraft, ground vehicles, and shipboard systems, the demand for high-power, high-bandwidth interconnect solutions is growing at the speed of business. To meet these needs, engineers and manufacturers are designing smaller, lightweight and ruggedized connectors that improve both data throughput and signal integrity, no matter the conditions or environment.

ITT Cannon is a leading global manufacturer of interconnect solutions serving aerospace and defense customers worldwide. We offer a wide range of high-speed, high bandwidth data solutions including Quadrax, Octorax, OctoGig™ 10 Gb Ethernet, RF and Twinax. Whether transferring critical signals to commercial and military pilots, streaming data through complex military satellites, or ensuring business professionals stay connected via streaming Wi-Fi during international flights, ITT Cannon connects the world's most important information with those who need it most.



Key Features & Benefits:

- Low insertion force contacts
- Environmental & non-environmental versions
- Polarizing posts that are removable from the mating face
- Field replaceable inserts
- Crimp, coax, power, printed circuit, and wire wrap-able post style contacts
- Waveguide connections available

Twinax

- Small compact size configured for size 8 cavities.
- Fully tested at 2.5 Gb data rates.
- Available in popular rectangular ARINC 600 and circular Connectors.
- Single compact solution for SPE.

Quadrax

- Small compact size configured for size 8 Cavities.
- Fully tested at 5 Gb data rates.
- Available in popular rectangular ARINC 600 and circular connectors.
- Exceeds ARINC Specifications for Quadrax contacts.
- Single compact solution for 5 Gb data transfer over copper.

OctoRax

- Small compact size configured for size 8 Cavities.
- Fully tested at 10 Gb data rates.
- Available in popular rectangular ARINC 600 and circular connectors.
- Single compact solution for 10 Gb data transfer over copper.

OctoGig™ Termini

- Small, lightweight and easy to install.
- Fully tested at 10 Gb data rates.
- Suitable for use with Cat 7 Cable
- Uses standard Size 22 contacts with standard tooling.
- Available in popular rectangular ARINC 600 and circular Connectors.
- Single Termini Solution for 10 Gb data transfer over copper.

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

Twinax Termini Overview

Specifications

Material/Plating

Specification	ARINC TwinAx	BACC47 - 38999 TwinAx
Shell / Outer Contact	Material: Beryllium Copper Alloy	Material: Brass
	Finish: Gold Plate over Nickel Plate	Finish: 50-90 Microinches of Gold over 100 Microinches of Nickel
Inner Contacts	Material: Beryllium Copper Alloy	Material: Copper Alloy
	Finish: Gold Plate over Nickel Plate	Finish: 50-90 Microinches of Gold over 100-250 Microinches of Nickel
Insulators	Thermoplastic	Fluoropolymer
Ferrule	Material: Brass	Material: Brass
	Finish: Nickel Plate	Finish: 50-90 Microinches of Gold over 100-250 Microinches of Nickel
Stabilizing Sleeve	Thermoplastic	Sleeve: Thermoplastic / Grommet: Fluorosilicone

Mechanical Specifications

Specification	ARINC TwinAx	BACC47 - 38999 TwinAx
Temperature Range	-65°C to +175°C	-65°C to +175°C
Salt Spray	48 hours corrosion resistance	48 hours corrosion resistance
Shock	ARINC 600	MIL-DTL-38999 Series III
Vibration	ARINC 600	MIL-DTL-38999 Series III
Endurance	500 Mating Cycles	500 Mating Cycles

Electrical Specifications

Specification	ARINC TwinAx	BACC47 - 38999 TwinAx
Bandwidth	Up to 3 GHz	Up to 3 GHz
Data Rate	Greater than 3 Gb/s	Greater than 3 Gb/s
Voltage Rating	500 Vrms at sea level	500 Vrms at sea level
Dielectric Withstanding Voltage	Inner to Inner Contact: 1000 Vrms at sea level Inner to Outer Contact: 500 Vrms at sea level	Inner to Inner Contact: 1000 Vrms at sea level Inner to Outer Contact: 500 Vrms at sea level
Contact Resistance	60 mΩ maximum	60 mΩ maximum
Insulation Resistance	5000 megohms minimum	5000 megohms minimum
Impedence	100 Ω ± 10 Ω	100 Ω ± 10 Ω

Test Protocols

Class E according EN 50173 with Category 6 cables
Class EA according EN 50173 with Category 6A cables
Class F according EN 50173 with Category 7 cables
Up to 10Gbps Ethernet (10GBase-T) according IEEE

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

cannon

Quadrax Termini Overview

Specifications

Material/Plating

Specification	ARINC Quadrax	BACC47 - 38999 Quadrax
Shell / Outer Contact	Material: Beryllium Copper Alloy	Material: Brass
	Finish: Gold Plate over Nickel Plate	Finish: 50-90 Microinches of Gold over 100 Microinches of Nickel
Inner Contacts	Material: Beryllium Copper Alloy	Material: Copper Alloy
	Finish: Gold Plate over Nickel Plate	Finish: 50-90 Microinches of Gold over 100-250 Microinches of Nickel
Insulators	Thermoplastic	Fluoropolymer
Ferrule	Material: Brass	Material: Brass
	Finish: Nickel Plate	Finish: 50-90 Microinches of Gold over 100-250 Microinches of Nickel
Stabilizing Sleeve	Thermoplastic	Sleeve: Thermoplastic / Grommet: Fluorosilicone

Mechanical Specifications

Specification	ARINC Quadrax	BACC47 - 38999 Quadrax
Temperature Range	-65°C to +175°C	-65°C to +175°C
Salt Spray	48 hours corrosion resistance	48 hours corrosion resistance
Shock	ARINC 600	MIL-DTL-38999 Series III
Vibration	ARINC 600	MIL-DTL-38999 Series III
Endurance	500 Mating Cycles	500 Mating Cycles

Electrical Specifications

Specification	ARINC Quadrax	BACC47 - 38999 Quadrax
Bandwidth	Up to 3 GHz	Up to 3 GHz
Data Rate	Greater than 5 Gb/s	Greater than 5 Gb/s
Voltage Rating	500 Vrms at sea level	500 Vrms at sea level
Dielectric Withstanding Voltage	Inner to Inner Contact: 1000 Vrms at sea level Inner to Outer Contact: 500 Vrms at sea level	Inner to Inner Contact: 1000 Vrms at sea level Inner to Outer Contact: 500 Vrms at sea level
Contact Resistance	60 mΩ maximum	60 mΩ maximum
Insulation Resistance	5000 megohms minimum	5000 megohms minimum
Impedence	100 Ω ± 10 Ω	100 Ω ± 10 Ω

Test Protocols

Class E according EN 50173 with Category 6 cables
Class EA according EN 50173 with Category 6A cables
Class F according EN 50173 with Category 7 cables
Up to 10Gbps Ethernet (10GBase-T) according IEEE

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

Octorax Termini Overview

Specifications

Material/Plating

Specification	ARINC Octorax	BACC47 - 38999 Octorax
Shell / Outer Contact	Material: Beryllium Copper Alloy	Material: Beryllium Copper Alloy
	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel
Inner Contacts	Material: Beryllium Copper Alloy	Material: Beryllium Copper Alloy
	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel
EMI Shield	Material: Beryllium Copper Alloy	Material: Beryllium Copper Alloy
	Finish: Nickel Plate	Finish: Nickel Plate
Insulators	Thermoplastic	
Ferrule	Material: Brass	Material: Brass
	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel	Finish: 50-100 Microinches of Gold over 50-150 Microinches of Nickel
Stabilizer Sleeve (ARINC models)	Thermoplastic	NA
Sealing Boot (38999 models)	NA	Grommet: Fluorosilicone

Mechanical Specifications

Specification	ARINC Octorax	BACC47 - 38999 Octorax
Temperature Range	-65°C to +175°C	-65°C to +175°C
Salt Spray	48 hours corrosion resistance	48 hours corrosion resistance
Shock	ARINC 600	MIL-DTL-38999 Series III
Vibration	ARINC 600	MIL-DTL-38999 Series III
Endurance	500 Mating Cycles	500 Mating Cycles

Electrical Specifications

Specification	ARINC or BACC47 - 38999 Octorax
Bandwidth	Up to 5 GHz
Data Rate	10 GbE/s
Voltage Rating	500 Vrms at sea level
Current Rating	1.5 A nominal
Dielectric Withstanding Voltage	500 Vrms at sea level
Contact Resistance	60 mΩ maximum
Insulation Resistance	5000 megohms minimum
Impedence	100 Ω ± 10 Ω

Test Protocols

Class E according EN 50173 with Category 6 cables
Class EA according EN 50173 with Category 6A cables
Class F according EN 50173 with Category 7 cables
Up to 10Gbps Ethernet (10GBase-T) according IEEE

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

cannon

OctoGig™ Termini Overview

Ultra-High-Speed, 10 Gb Ethernet

Material/Plating

Specification	
Shells	Material: Zinc Alloy / Finish: Zinc Plating
Inner Contacts	Material: Copper Alloy / Finish: Flash Gold Plating
Insulators	Thermoplastic Compliant to EN 45545 (HL3/R23)
Clip, Retention Cap, and Support Sleeve	Thermoplastic Compliant to UNI CEI 11170-3 (LR4) and NF F 16-102 (I2, F2)
O-ring	NBR Rubber

Mechanical Specifications

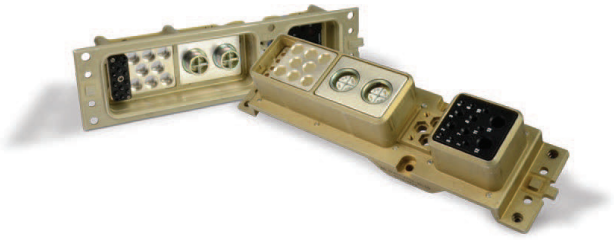
Specification	
Temperature Range	-40°C to +100°C
Salt Spray	200 hours corrosion resistance
Vibration	IEC EN 61373 Cat. 1 Class B
Retention Force (5 Cycles)	100N
Endurance	100 Mating Cycles

Electrical Specifications

Specification	
Data Rate	Up to 10 GbE/s EN50173 Class F (Cat. 7)
Operating Voltage	200 Vac / 250 Vdc
Test Voltage	1000 Vac
Current Rating	3 A maximum
Contact Resistance	60 mΩ maximum
Insulation Resistance	5000 megohms minimum
Impedence	100 Ω ± 10 Ω

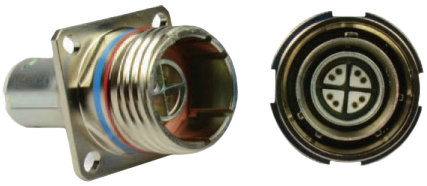
Test Protocols

Class E according EN 50173 with Category 6 cables
Class EA according EN 50173 with Category 6A cables



Rack & Panel BKA ARINC 600

Class F according EN 50173 with Category 7 cables
Up to 10Gbps Ethernet (10GBase-T) according IEEE



Circular KJ Series (38999-Style)

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

RF Coax Termini

ITT Cannon offers a comprehensive selection of high-speed contacts designed to meet the performance levels required for multi-gigabit modulated data transmission over wireless networks.
Currently compatible with 802.11ac networks, performance levels also support upcoming generations of 802.11 wireless Ethernet system performance requirements, as well as Ka/Ku band systems for MTS architecture being implemented on aircraft for in flight internet connectivity in international locations.

High-Speed RF Performance

Contact Size	Receptacle Part Number	Plug Part Number	RF Cable P/N	Rated Performance (GHz)
8	980-9501-015	980-9501-021	RG-405	32
8	980-9501-016	980-9501-022	RG-402	32
8	980-9501-017	980-9501-023	RG-142	12.4
8	349-1149-000	349-1087-007	RG-316	3
12	980-9501-018	980-9501-024	RG-405	40
16	980-9501-019	980-9501-025	LMR-100	6
16	980-9501-020	980-9501-026	RG-405	40

Multi-Port RF 38999 Connector

BMB Size #8, +26 GHz

SMPM Size #12, +60 GHz

SMPS Size #16, +100 GHz

ITT Cannon expands its D38999-style connector portfolio to include 26 to 100 GHz, Multi-Port RF termini. Providing seamless adoption across any MIL-DTL-38999 style connectors, our BMB, SMPM and SMPS, spring-loaded termini offer constant interface connection and performance in high shock and vibration applications.

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

KJAQ Series with ARINC Twinax, Quadrax & Octorax Contacts

KJAQ

The KJAQ is a hi-reliability connector used today to deliver data rates up to 10 Gbs. Featuring versions of a rear release crimp pin or socket contacts and front release PC pin Quadrax versions. The KJAQ series uses an ARINC compliant contact system.
The KJBQ series uses a MIL- DTL 38999 compliant contacts system. Both connector series meet the harsh environment required by both the ARINC and 38999 specifications.

Ordering Guide

1- Series	2- Shell Style	3- Class	4- Endbell	5- Shell Size	6- Hardware Finish	7- Contact Count	8- Contact Type	9- Polarization	10- PC Mod Code	11- Contact Mod Code
KJAQ	2	N	T	21	F	4	C	N	2	

1- Series	
KJAQ	Series III Connector with insert for ARINC style (Twinax Quadrax and Octorax contacts).
2- Shell Style	
0	Wall mount receptacle with rear thread; accommodates rear release, rear removable crimp pin contacts.
2	Box mount receptacle without rear thread; accommodates front release, front removable PC pin contacts.
4	Jam Nut Receptacle without rear thread, accommodates front release, front removable PC pin contacts.
6	Straight plug accommodates rear release, rear removable crimp socket contacts.
7	Jam nut receptacle with rear thread; accommodates rear release, rear removable crimp pin contacts.
3- Class	
N	Non-Environmental
4- Endbell	
T	No Rear Accessory
5- Shell Size	
9, 17, 21, 23, 25 Per 38999 Series III Connectors	
6- Hardware Finish	
F	Selective Electroless Nickel over Electroless Silver (RoHS)
W	Olive Drab Cadmium over Electroless Nickel Plate

7- Contact Count	
1	Single size 8 contact (size 9 shell)
2	Two size 8 contacts (size 17 shell)
4	Four size 8 contacts (size 21 shell)
6	Six size 8 contacts (size 23 shell)
8	Eight size 8 contacts (size 25 shell)
8- Contact Type	
C	Quadrax
E	Octorax
T	Twinax
M	Mixed contacts, sold separetly*
9- Polarization	
N	Normal
A, B, C, D, E	Reference polarization table at start of this section
10- PC Contact MOD Code (applies to shell style 2 & 4)	
1	.150" Min solder post extension (Contact type E)
2	.250" MIn solder post extension (Contact type C and E)
11- Contact MOD Code	
Leave Blank if None	
L	Less contacts, not stamped on connector

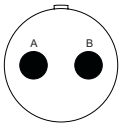
*If mixed contact types are required, use Mod Code L and purchase contacts separately.
For Twinax PCB configurations, please contact the factory.

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

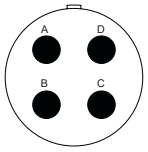
KJAQ Insert Arrangement & Polarization

KJAQ Insert Arrangements

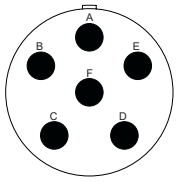
Size 9



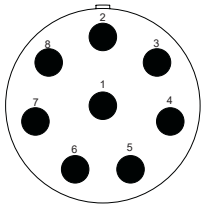
Size 17



Size 21



Size 23

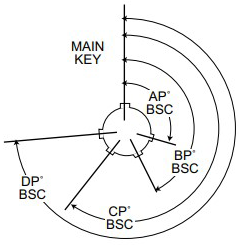


Size 25

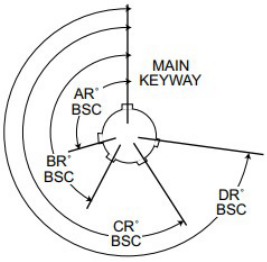
Notes:
1. All 38999-Style type inserts, in both the plug and the receptacle connectors, provide electrical bonding of the cable shield to the housing.
2. 38999 type inserts are integral part of the shell. Arrangements, other than those shown, are available upon request.
3. All insert arrangements are 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."

Polarization

Plug Front



Receptacle Front



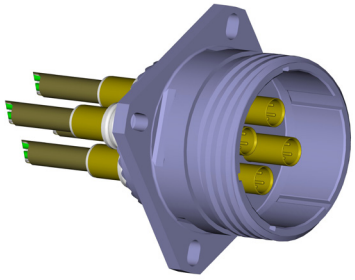
Polarization					
Shell Size	Polarization	ARº or APº BSC	BRº or BPº BSC	CRº or CPº BSC	DRº or DPº BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	65	155	234	304
	E	95	131	197	240
17	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
21, 23 and 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

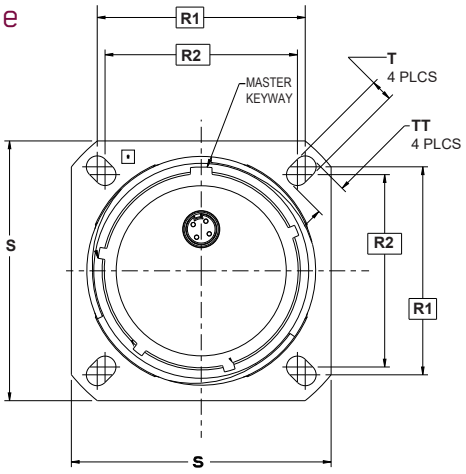
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

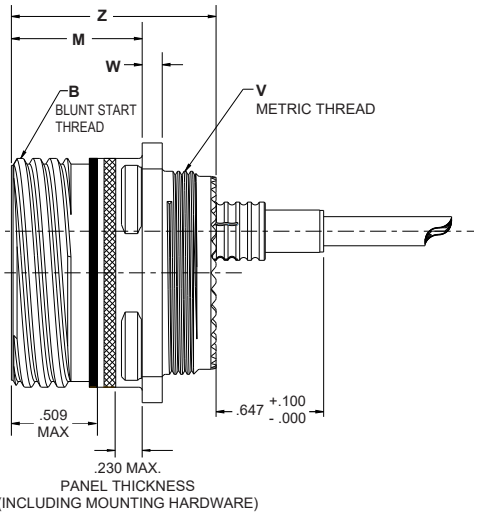
KJAQ (ARINC Twinax, Quadrax and Octorax)

Shells Dimensions

KJAQ0 Wall Mounting Receptacle

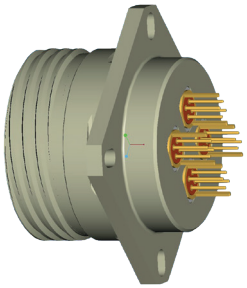


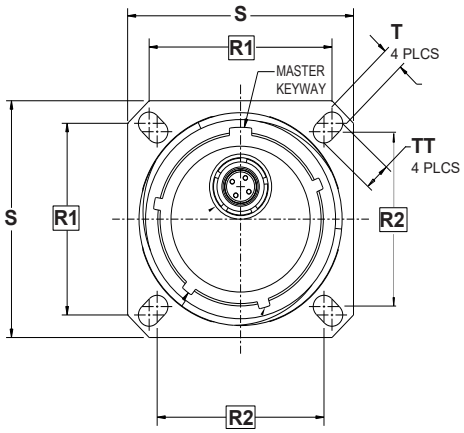


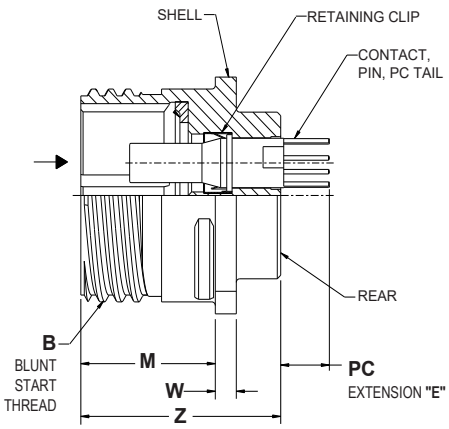


Size	MS Shell Size Code	B Class -2A Blunt Start (Plated)	M +.000 (+.000) -.005 (-.130)	R1	R2	S ±.012 ±(.300)	T +.004 (.100) -.002 (.050)	TT +.004 (.100) -.002 (.050)	V Thread Metric Thread (Plated)	W Max	Z +.005 (.130) -.010 (.250)
9	A	.6250-0. 1P-0. 3L-TS	.820 (20.83)	.719 (18.26)	.594 (15.09)	.938 (23.83)	.128 (3.25)	.216 (5.49)	M12X1-6g 0.100R	.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 thread)







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 Max	PC Extension "E" Contact*
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)	1.175 (29.85)	.250 (6.35) or .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)		
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)		
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)		
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)		

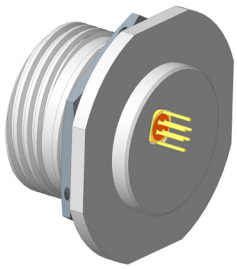
* PC Extension "E" length based on contact specifications outlined in order guide. If ordered separately, reference contact page for part numbers.

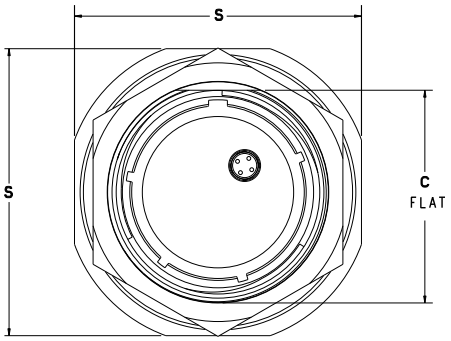
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

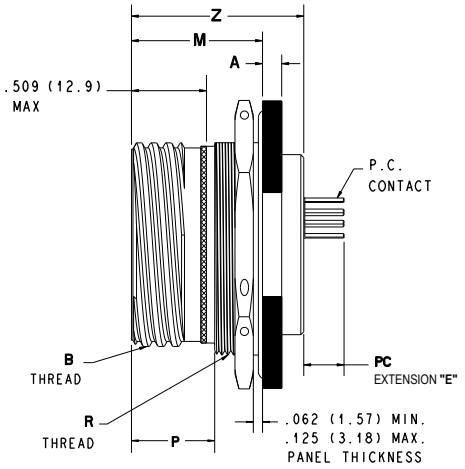
KJAQ (ARINC Twinax, Quadrax and Octorax)

Shells Dimensions (continued)

KJAQ4 Jam Nut Receptacle (no rear thread)



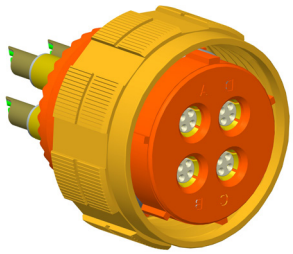


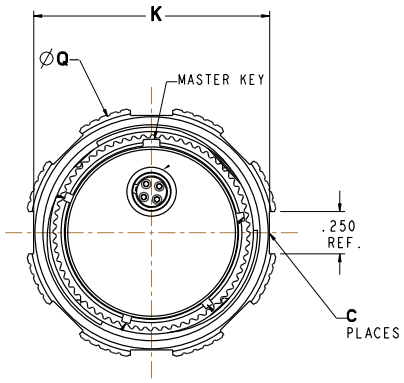


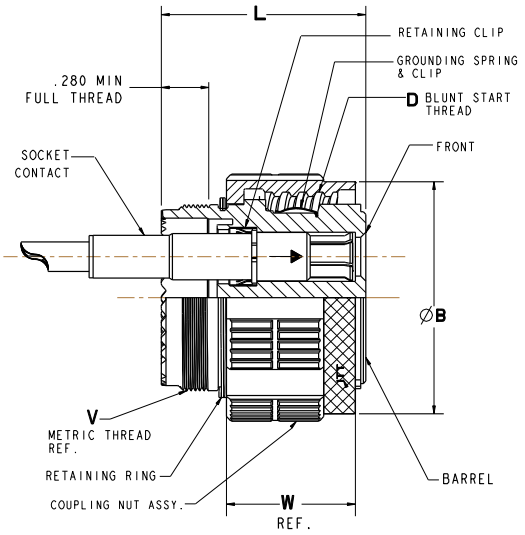
Size	MS Shell Size Code	A +.010 (.250) -.005 (.130)	B Class -2A Blunt Start (Plated)	C +.004 (.100) -.010 (.250)	M +.005 (.130) -.004 (.100)	P +.005 (.130) -.004 (.100)	S +.016 (.410) -.004 (.100)	R Thread Metric Thread (Plated)	Z Max	PC Extension "E" Contact*
9	A	.104 (2.64)	.6250-0. 1P-0. 3L-TS	.651 (16.53)	.871 (22.12)	.555 (14.10)	1.062 (26.97)	M17X1-6g 0.100R	1.175 (29.85)	.250 (6.35) or .150 (3.81)
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		
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		
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		
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		

* PC Extension "E" length based on contact specifications outlined in order guide. If ordered separately, reference contact page for part numbers.

KJAQ6 Straight Plug







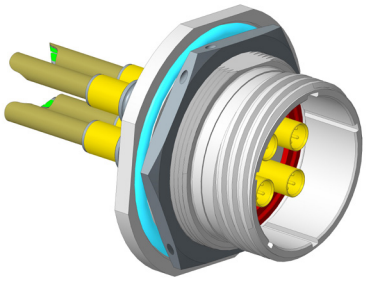
Size	MS Shell Size Code	B +.008 (.200) -.000 (.000)	C Places	D Class -2B Blunt Start (Plated)	K Max	L Max	Q Max	V Thread Metric Thread (Plated)	W +.008 (.200) -.004 (.100)
9	A	.724 (18.40)	4	.6250-0. 1P-0. 3L-TS	.748 (19.00)	1.234 (31.34)	.859 (21.82)	M12X1-6g 0.100R	.760 (19.30)
17	E	1.268 (32.20)	4	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)	1.75 (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)

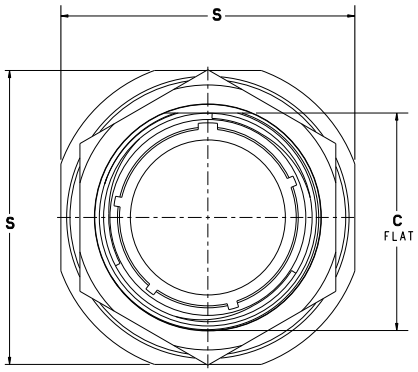
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

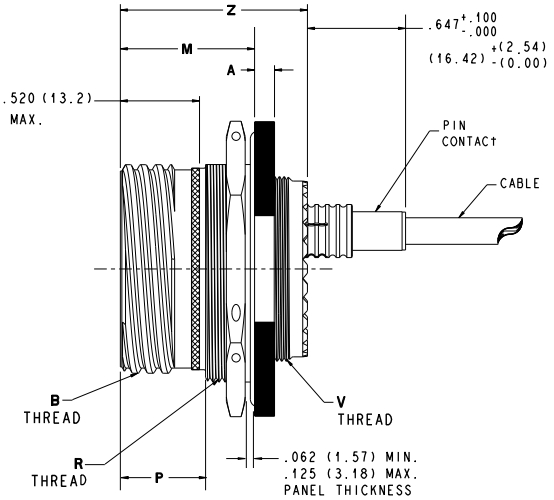
KJAQ (ARINC Twinax, Quadrax and Octorax)

Shells Dimensions (continued)

KJAQ7 Jam Nut Receptacle (with rear thread)







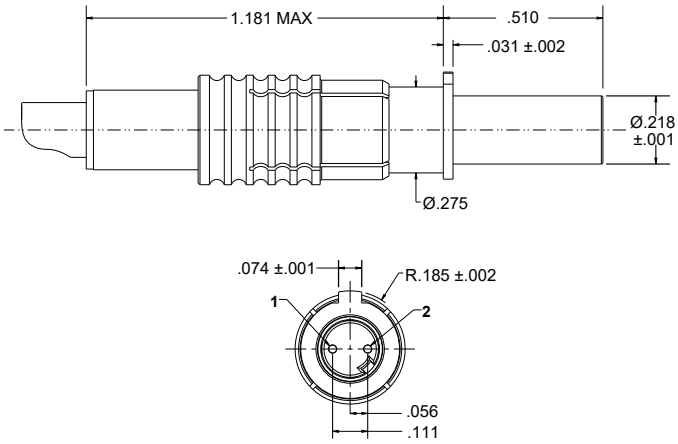
Size	MS Shell Size Code	A +.010 (.250) -.005 (.130)	B Class -2A Blunt Start (Plated)	C +.004 (.100) -.010 (.250)	M +.004 (.100) -.010 (.250) Plated	P +.005 (.130) -.004 (.100)	S +.016 (.410) -.004 (.100)	R Thread Metric Thread (Plated)	V Thread Metric Thread (Plated)	Z +.005 (.130) -.004 (.100)
9	A	.104 (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	
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	
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	
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	

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

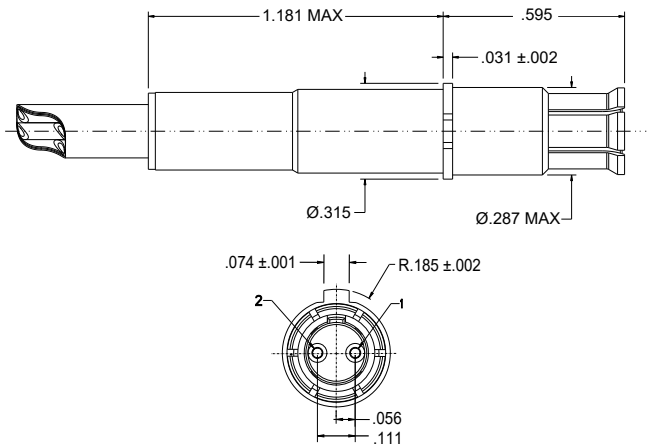
KJAQ Twinax Termini- ARINC Size 8

Crimp Twinax - Size 8 Per ARINC Test Standards (0.210 Max Cable)

Size 8 Crimp Pin - Part Number 224-1001-005



Size 8 Crimp Socket - Part Number 244-0016-005



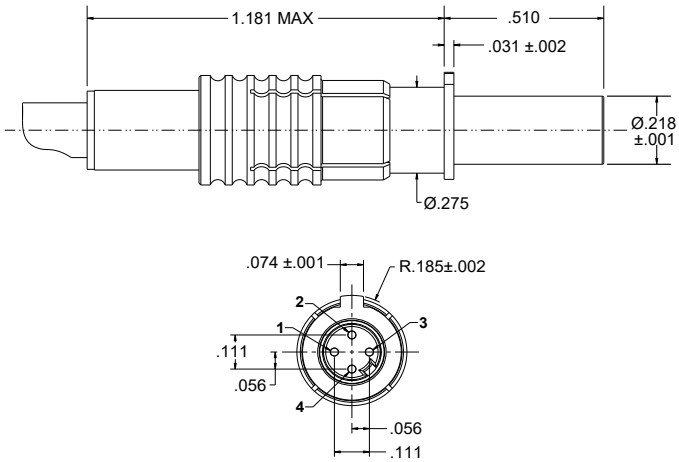
Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-1001-005	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.210
Socket	244-0016-005	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.210

For PCB configurations, please consult the factory.

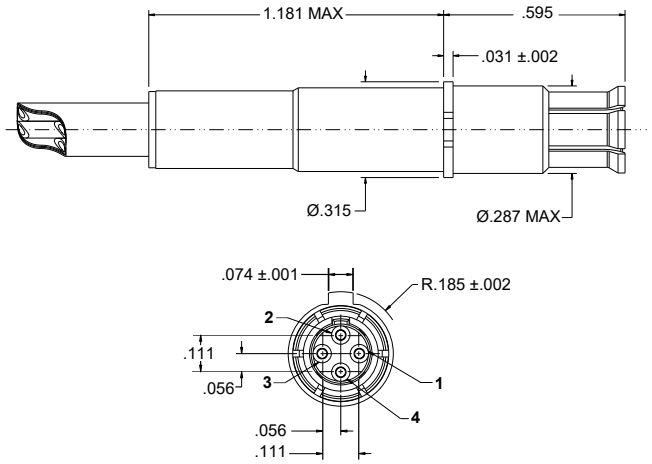
KJAQ Quadrax Termini- ARINC Size 8

Crimp Quadrax - Size 8 Per ARINC Test Standards (0.185 Max Cable)

Size 8 Crimp Pin - Part Number 224-0007-004



Size 8 Crimp Socket - Part Number 244-0011-000



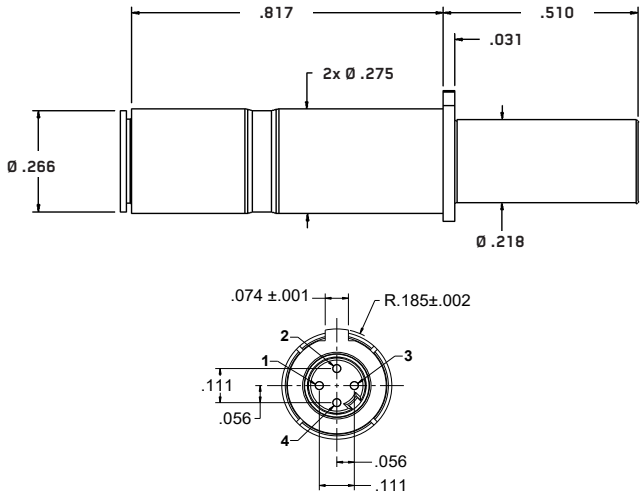
Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-0007-004	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.185
Socket	244-0011-000	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.185

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

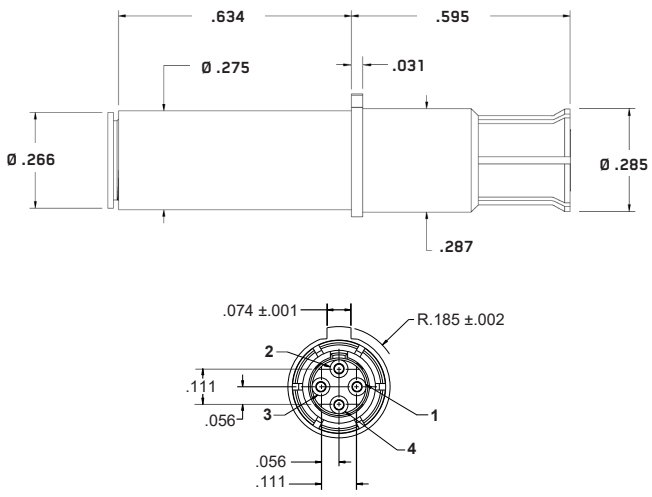
KJAQ Quadrax Termini- ARINC Size 8

Crimp Quadrax - Size 8 Per ARINC Test Standards (0.210 Max Cable)

Size 8 Crimp Pin - Part Number 224-0007-006



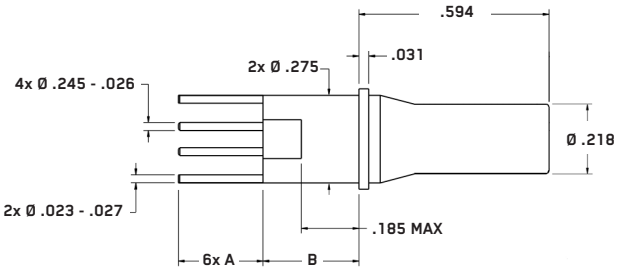
Size 8 Crimp Socket - Part Number 244-0011-002

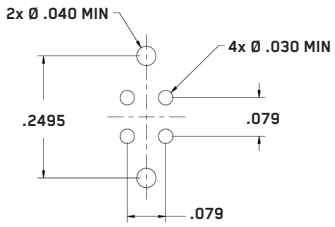


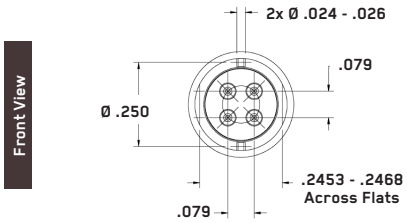
Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-0007-006	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.210
Socket	244-0011-002	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax	0.210

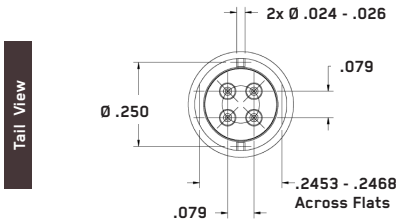
KJAQ Quadrax Termini - ARINC Size 8

Solder, PCB - Size 8 Quadrax Contact Per ARINC Test Standards









Gender	Part Number	Type	Size	Solder Post Length	A	B	For Use In ITT Series	Test Standards
Pin	224-0007-012	FR-FR	8	0.150	0.151 - 0.179	0.299 - 0.307	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC Quadrax
Pin	224-0007-015	FR-FR	8	0.250	0.268 - 0.280	0.299 - 0.307		ARINC Quadrax

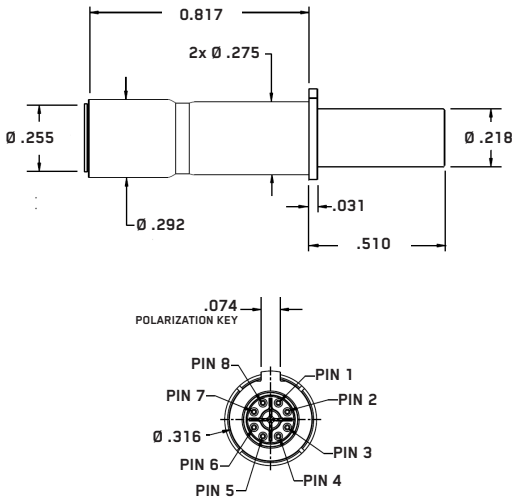
Please consult the factory if your application requires extended body contacts.

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

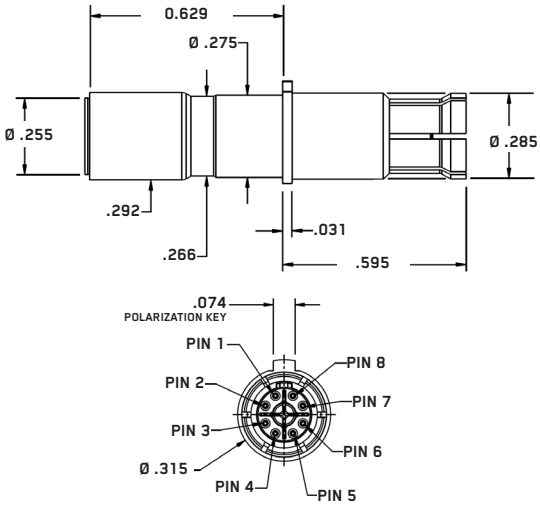
KJAQ Octorax Termini - ARINC 8

ARINC Crimp Octorax

Size 8 Crimp Pin - Part Number 224-2100-006

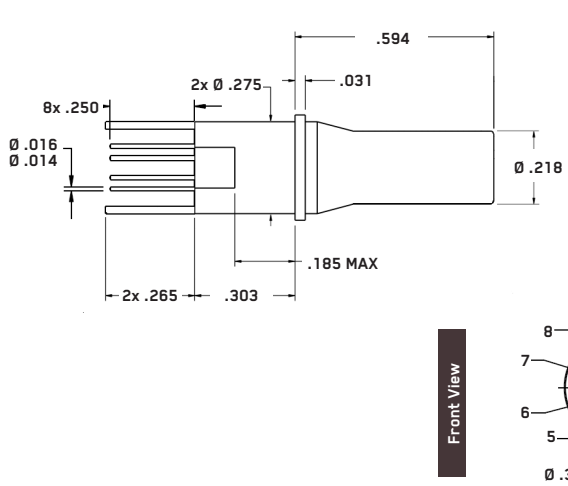


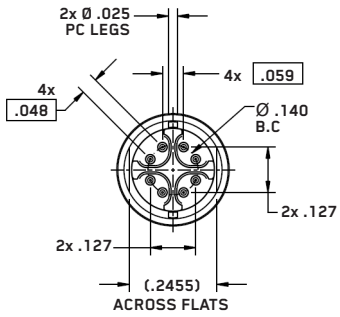
Size 8 Crimp Socket - Part Number 244-2100-003



Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-2100-006	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC	0.210
Socket	244-2100-003	RR-RR	8	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC	0.210

ARINC Solder, PCB Octorax



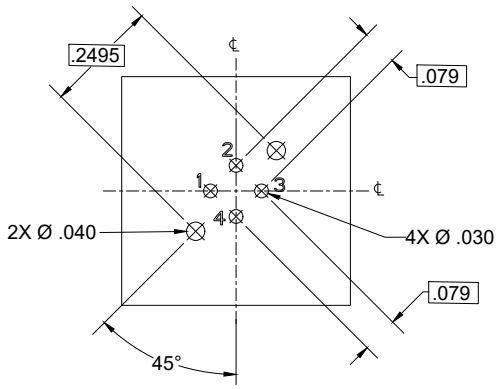
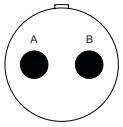
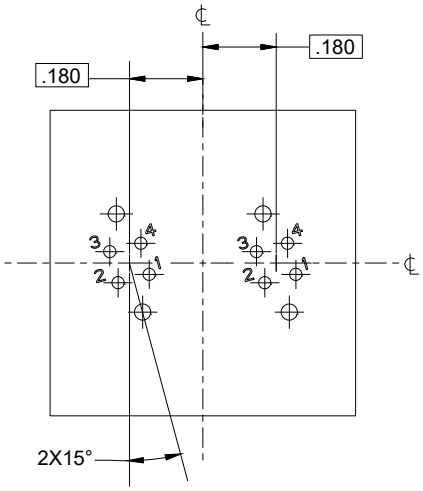
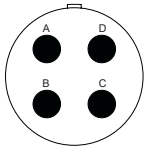
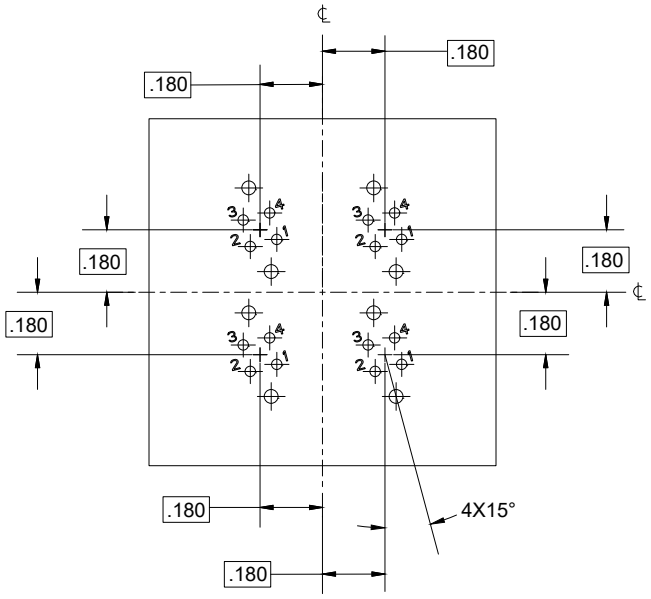


Gender	Part Number	Type	Size	Solder Post Length	For Use In ITT Series	Test Standards
Pin	224-2100-001	FR-FR	8	0.250	ARINC 600, ARINC 404 & 81659 Style, KJAQ (D38999-Style)	ARINC

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

KJAQ (ARINC Quadrax) PCB Hole Patterns

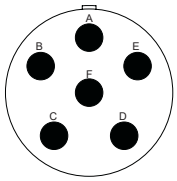
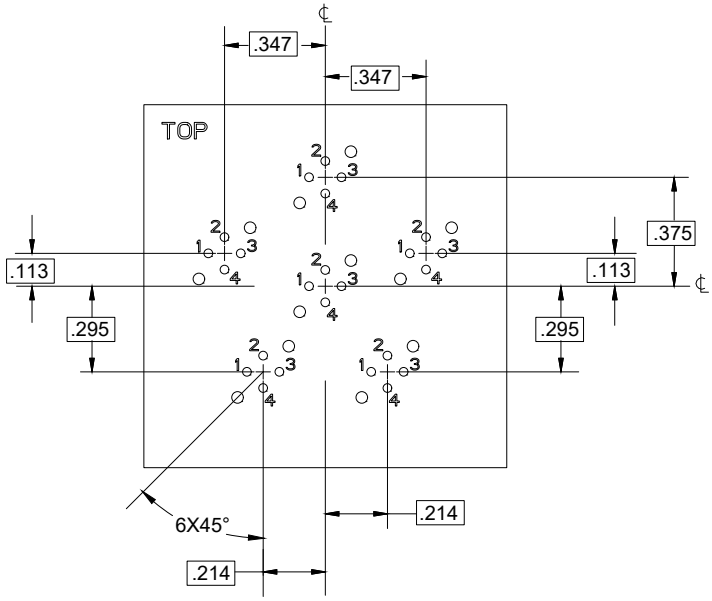
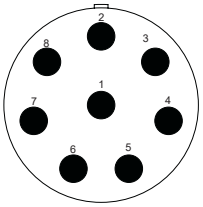
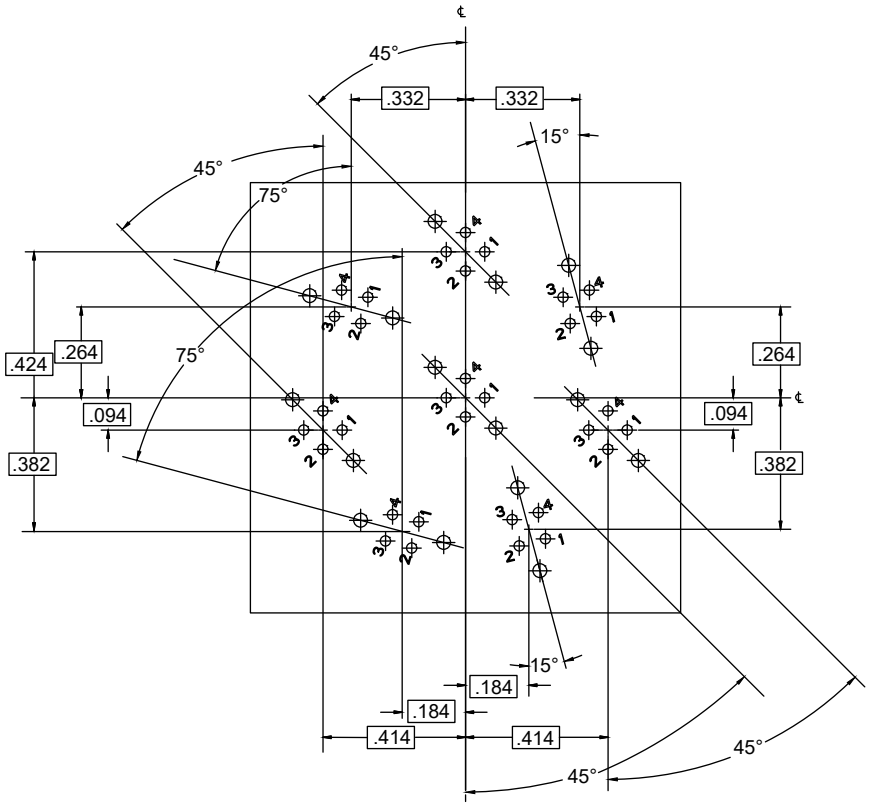
For PCB contact hole dimensions and spacing please reference ARINC Quadrax contact specifications

Layout	Pin
 Shell Size 9 Contact QTY 1C Contact Size 8	
 Shell Size 17 Contact QTY 2C Contact Size 8	
 Shell Size 21 Contact QTY 4C Contact Size 8	

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

KJAQ (ARINC Quadrax) PCB Hole Patterns

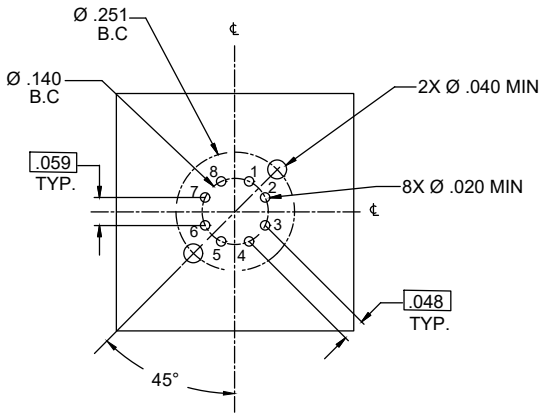
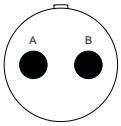
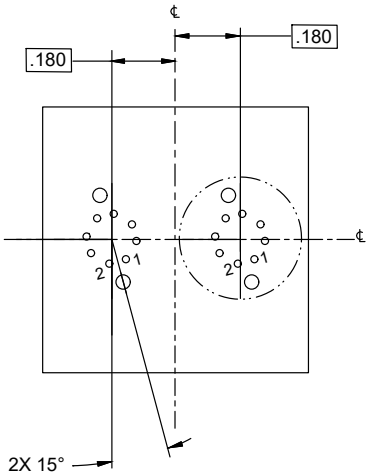
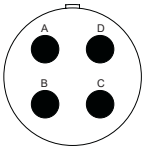
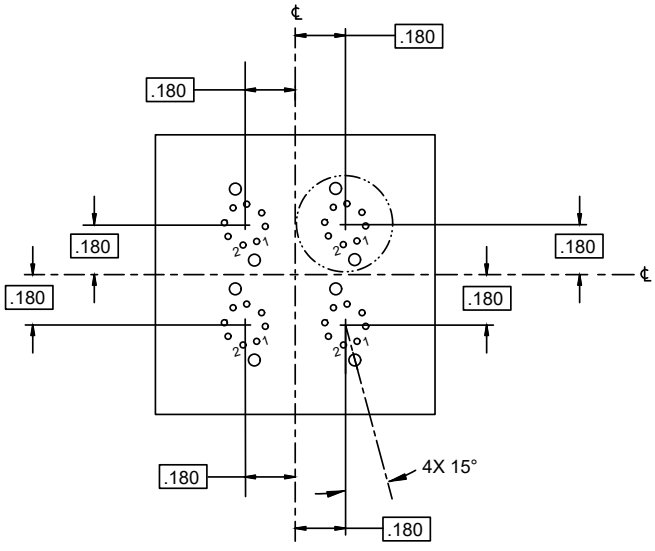
For PCB contact hole dimensions and spacing please reference ARINC Quadrax contact specifications

Layout	Pin
	
Shell Size: 23 Contact QTY: 6C Contact Size: 8	
	
Shell Size: 25 Contact QTY: 8C Contact Size: 8	

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

KJAQ (Octorax) PCB Hole Patterns

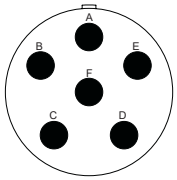
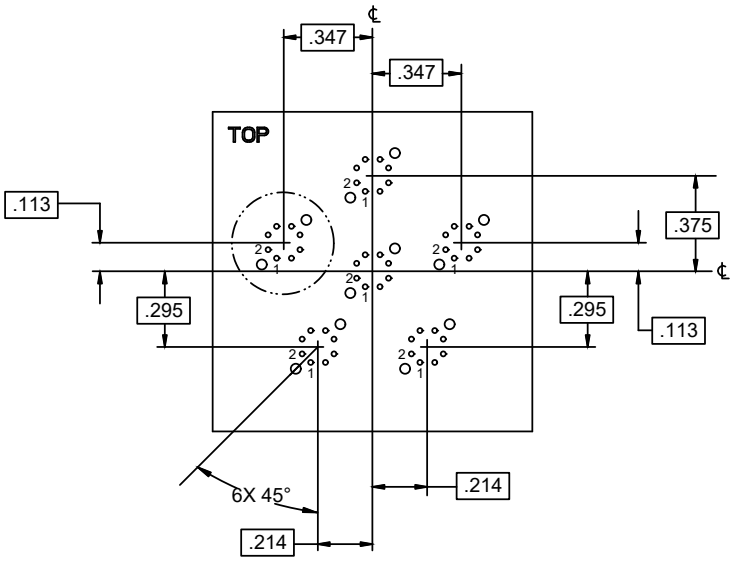
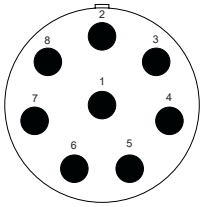
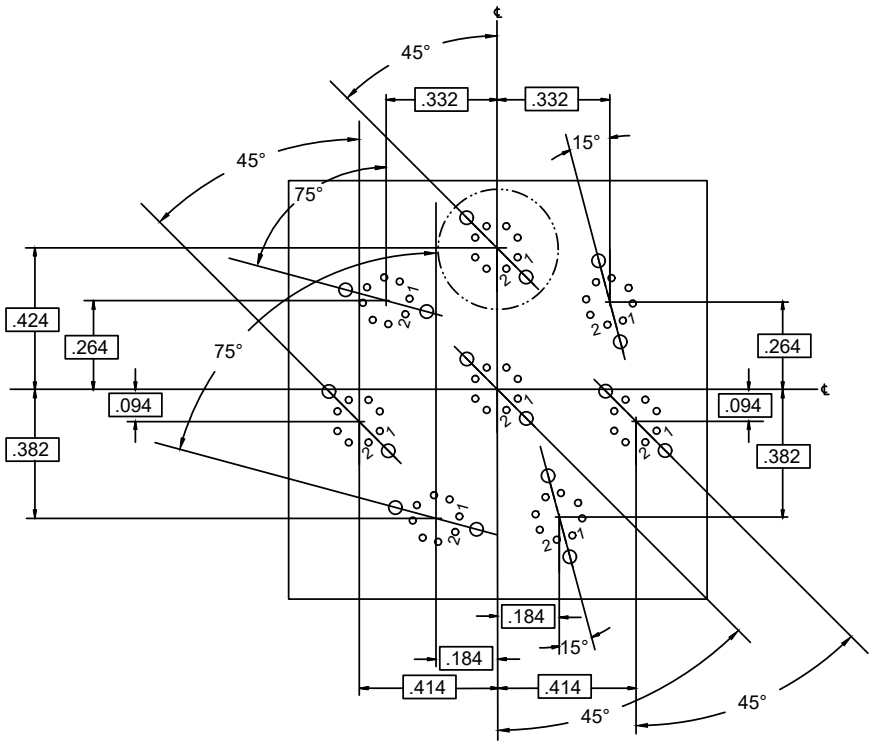
For PCB contact hole dimensions and spacing please reference Octorax contact specifications

Layout	Pin
 Shell Size 9 Contact QTY 1E Contact Size 8	
 Shell Size 17 Contact QTY 2E Contact Size 8	
 Shell Size 21 Contact QTY 4E Contact Size 8	

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

KJAQ (Octorax) PCB Hole Patterns

For PCB contact hole dimensions and spacing please reference Octorax contact specifications

Layout	Pin
	
Shell Size: 23 Contact QTY: 6E Contact Size: 8	
	
Shell Size: 25 Contact QTY: 8E Contact Size: 8	

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

KJBQ Series with BACC47 Twinax, Quadrax & Octorax Contacts

KJBQ

The KJBQ is a hi-reliability connector used today to deliver data rates up to 10 Gbs. Featuring versions of a rear release crimp pin or socket contact.
The KJAQ series uses an ARINC compliant contact system. The KJBQ series uses a MIL-DTL 38999 compliant contacts system. Both connector series meet the harsh environment required by both the ARINC and 38999 specifications.

Ordering Guide

1- Series	2- Shell Style	3- Class	4- Shell Size	5- Hardware Finish	6- Contact Count	7- Contact Type	8- Polarization	9- Contact Mod Code
KJBQ	6	T	11	F	75	P	N	L

1- Series	
KJBQ	Series III Connector with insert for 38999 (Twinax, Quadrax and Octorax contacts).
2- Shell Style	
0	Square flange, wall mount receptacle with rear thread; accommodates rear release, rear removable crimp contacts.
6	Straight plug accommodates rear release, rear removable crimp socket contacts.
3- Class	
T	Environment-resistant (without rear accessory)
4- Shell Sizes	
11, 17, 21, 23, 25 Per 38999 Series III Connectors	
5- Hardware Finish	
F	Electroless Nickel Plated Aluminum (RoHS code = ROH)
W	Olive Drab Cadmium over Electroless Nickel Plated Aluminum (RoHS code = NTC)
6- Contact Count	
01	Single size 8 contacts
75	Two size 8 contacts (size 17 shell) Four size 8 contacts (size 21 shell)
06	Six size 8 contacts
08	Eight size 8 contacts

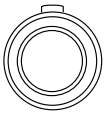
7- Contact Type	
P*	Pin Quadrax (Crimp)
S*	Socket Quadrax (Crimp)
PE	Pin Octorax (Crimp)
PT	Pin Twinax (Crimp)
ST	Socket Twinax (Crimp)
SE	Socket Octorax (Crimp)
8- Polarization	
N	Normal
A, B, C, D, E	Reference polarization table at start of this section
9- Contact Modifier Code	
L	Less Contacts

*Use P or S with mod code L when using multiple contact styles and purchase contact separately.
For PCB configurations, please consult the factory.

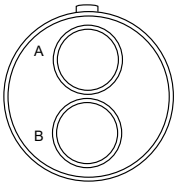
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

KJBQ Insert Arrangement & Polarization

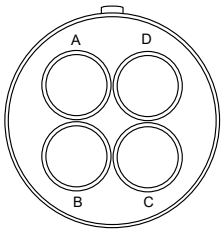
KJBQ Insert Arrangements



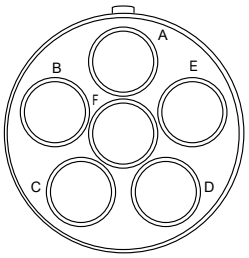
Size 11
Designator: 11-01
1 Contact



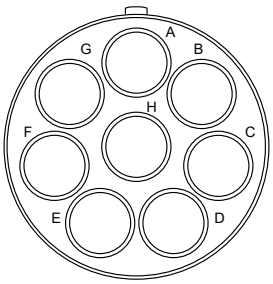
Size 17
Designator: 17-75
2 Contacts



Size 21
Designator: 21-75
4 Contacts



Size 23
Designator: 23-06
6 Contacts

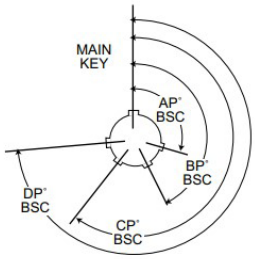


Size 25
Designator: 25-08
8 Contacts

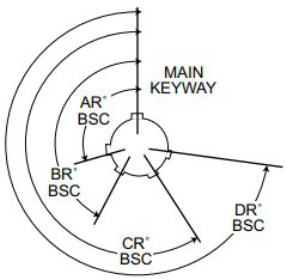
Notes:
1. All 38999-Style type inserts, in both the plug and the receptacle connectors, provide electrical bonding of the cable shield to the housing.
2. 38999 type inserts are integral part of the shell. Arrangements, other than those shown, are available upon request.
3. All insert arrangements are 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."

Polarization

Plug Front



Receptacle Front



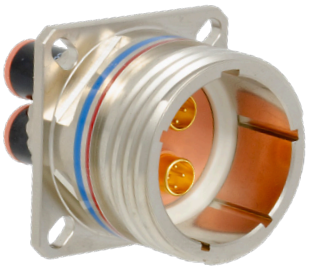
Polarization					
Shell Size	Polarization	ARº or APº BSC	BRº or BPº BSC	CRº or CPº BSC	DRº or DPº BSC
11	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
	D	119	146	176	298
	E	51	141	184	242
17	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
21, 23 and 25	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272

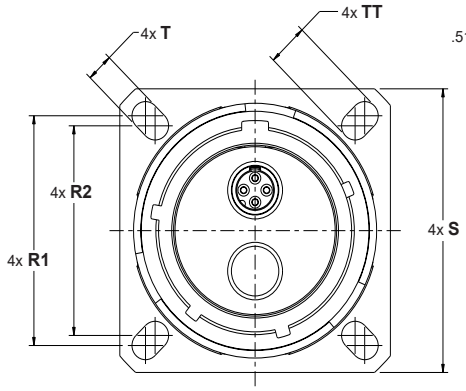
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

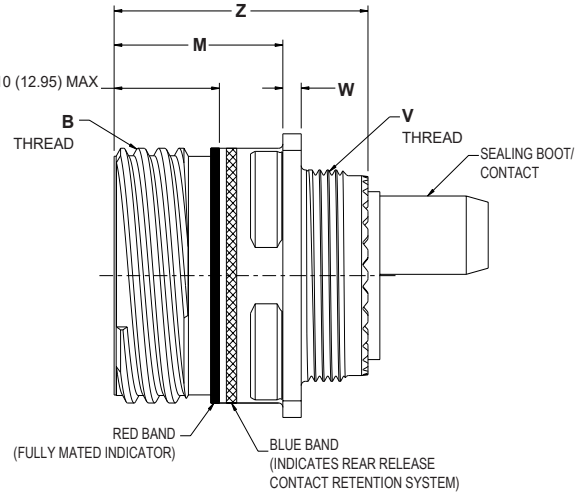
KJBQ (38999 Twinax, Quadrax and Octorax)

Shell Dimensions

KJBQ0 Wall Mounting Receptacle

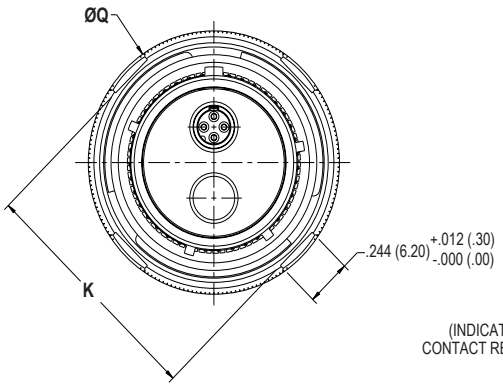


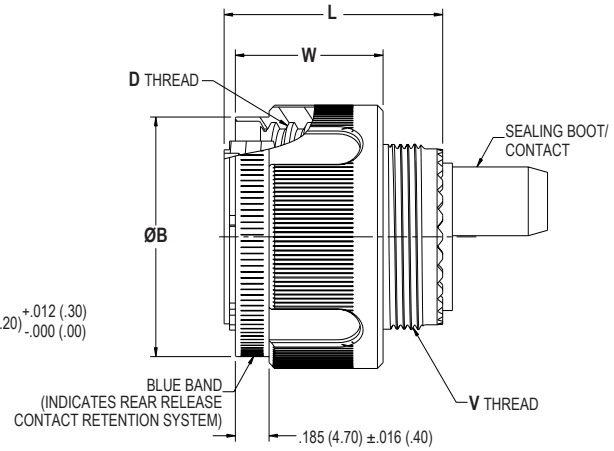




Shell Size	MS Shell size Code	B Thread Class 2A (Plated)	M +.000 (.000) -.005 (.130)	R1	R2	S +_.012 (.300)	T +.004 (.100) -.002 (.050)	TT +.004 (.100) -.002 (.050)	Metric V Thread (Plated)	W Max.	Z +.005 (.130) -.010 (.250)
9	A	.6250-0.1P-0.3L-TS	.820 (20.83)	.719 (18.26)	.594 (15.09)	.938 (23.83)	.128 (3.25)	.216 (5.49)	M12X1-6g 0.100R	.098 (2.50)	1.235 (31.36)
11	B	.7500-0.1P-0.3L-TS	.820 (20.83)	.812 (20.62)	.719 (18.26)	1.031 (26.19)	.128 (3.25)	.194 (4.93)	M15X1-6g 0.100R	.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)

KJBQ6 Straight Plug





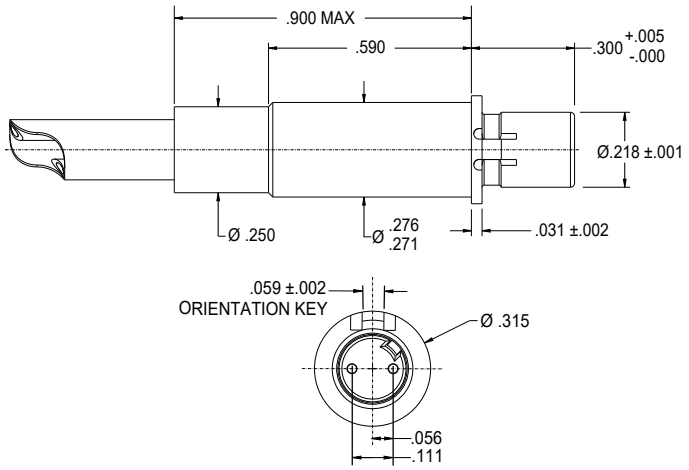
Size	MS Shell Size Code	ØB +.008 (.200) -.000 (.000)	D Thread Class 2B (Plated)	K Max.	L Max.	ØQ Dia Max.	Metric V Thread (Plated)	W +.008 (.200) -.004 (.100)
9	A	.724 (18.40)	.6250-0.1P-0.3L-TS	.748 (19.00)	1.234 (31.34)	.859 (21.82)	M12X1-6g 0.100R	.760 (19.30)
11	B	.831 (21.10)	.7500-0.1P-0.3L-TS	.862 (21.90)	1.234 (31.34)	.969 (24.61)	M15X1-6g 0.100R	.760 (19.30)
17	E	1.268 (32.20)	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)	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)	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)	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)

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

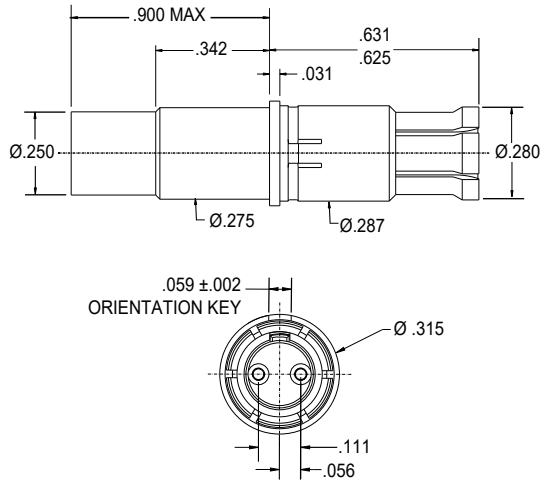
KJBQ Twinax Termini - BACC47 Size 8

Crimp Twinax - Size 8 Per BACC47 Test Standards

Size 8 Crimp Pin - Part Number 224-1001-006



Size 8 Crimp Socket - Part Number 244-0016-006



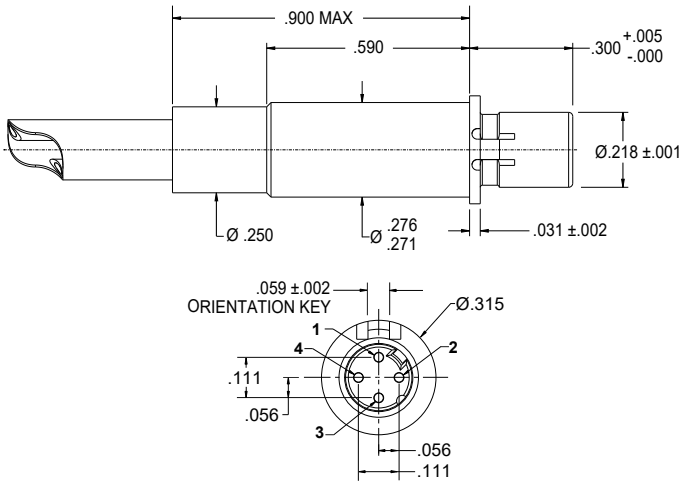
Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-1001-006		8	KJBQ (D38999 & EN3645 Styles), RPR (EN4165-Style)	BACC47/D38999	0.185
Socket	244-0016-006		8		BACC47/D38999	0.185

Not qualified to M39029 - 119 & /120
Not Qualified to European EN3155/74 and /75 and BACC47

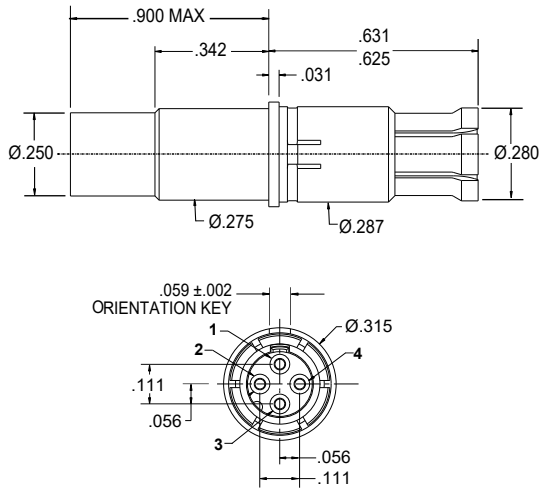
KJBQ Quadrax Termini - BACC47 Size 8

Crimp Quadrax - Size 8 Per BACC47 Test Standards

Size 8 Crimp Pin - Part Number 224-0009-000



Size 8 Crimp Socket - Part Number 244-0015-000



Gender	Part Number	Type	Size	For Use In ITT Series	Test Standards	Max Cable Dia
Pin	224-0009-000		8	KJBQ (D38999 & EN3645 Styles), RPR (EN4165-Style)	BACC47/D38999	0.185
Socket	244-0015-000		8		BACC47/D38999	0.185

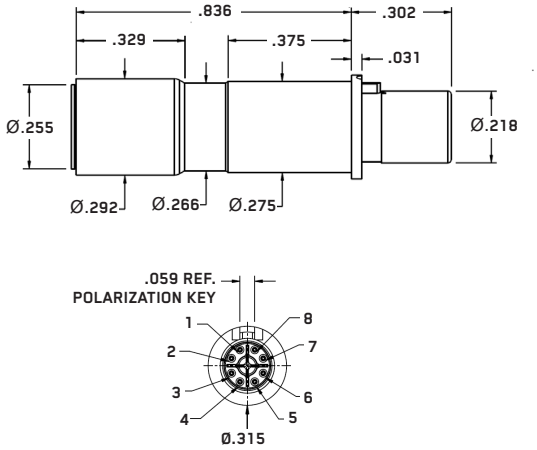
Not qualified to M39029 - 119 & /120
Not Qualified to European EN3155/74 and /75 and BACC47

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

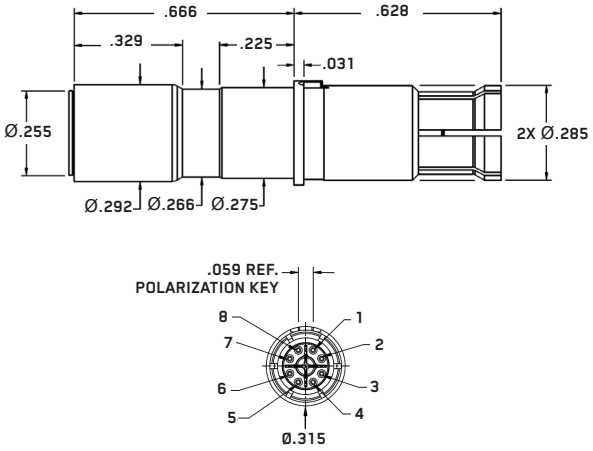
KJBQ Octorax Termini

BACC47 - 38999 Crimp Octorax

Size 8 Crimp Pin - 224-2100-005



Size 8 Crimp Socket - 244-2100-002



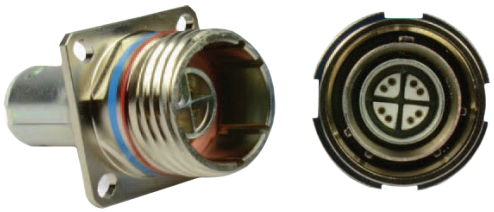
Gender	Part Number	Type	Size	Application	Test Standards	Ref. Cable Dia
Pin	224-2100-005	RR-RR	8	KJBQ (D38999 & EN3645 Styles), RPR (EN4165-Style)	D38999	0.210
Socket	244-2100-002	RR-RR	8		D38999	0.210

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

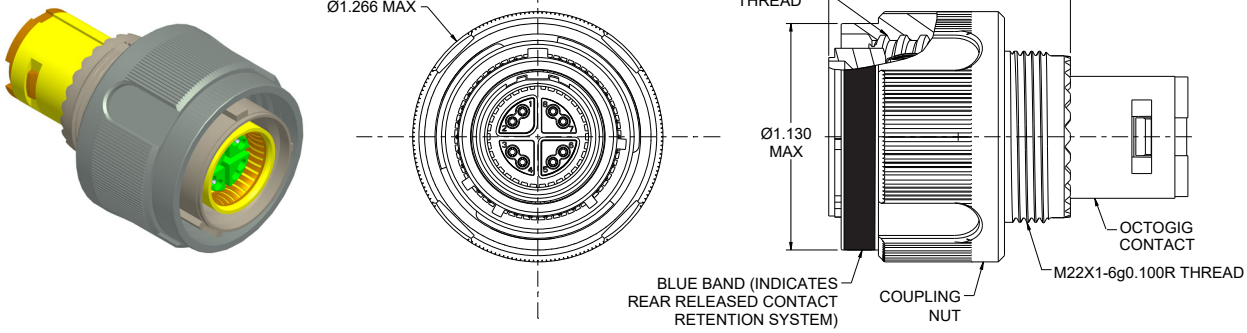
KJB Series with OctoGig™ Contacts

KJB OctoGig™

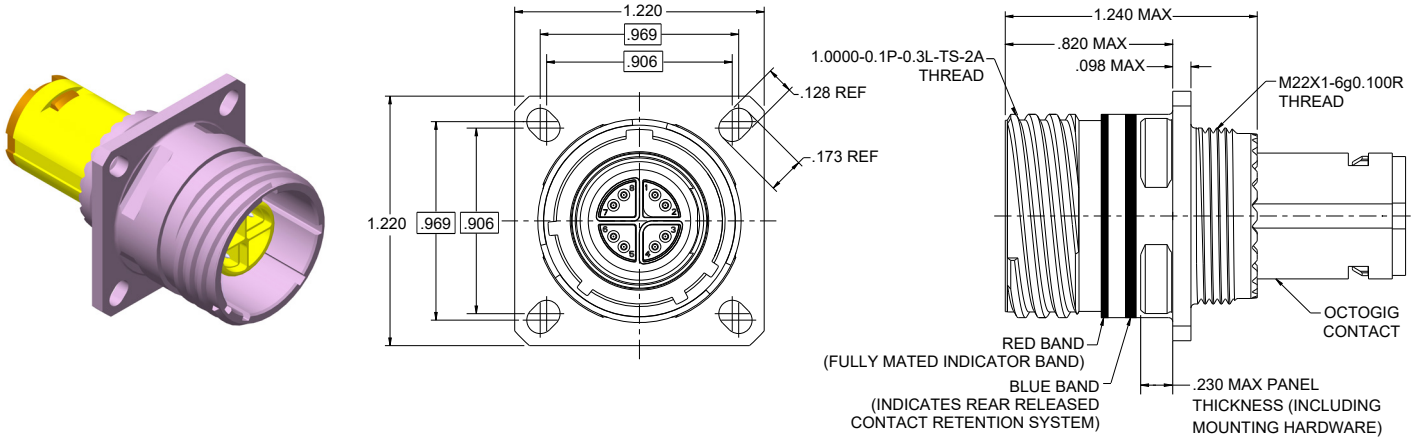
The OctoGig contact was designed to be compatible with 38999-Style connectors. A hi-reliability connector used today to deliver data rates up to 10 GHz. Featuring versions of a rear release crimp pin or socket contacts and front release PC pin version.



KJB6 Straight Plug - Socket contact part number: KJB6T15F1G1SN

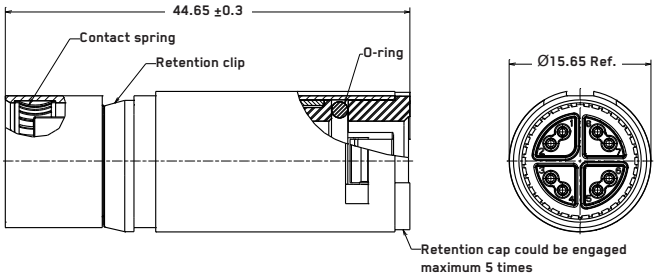


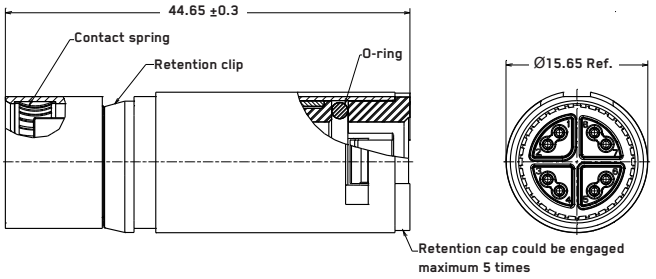
KJB0 Wall Mounting Receptacle - Pin contact part number: KJB0T15F1G1PN



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

OctoGig Contact Specifications





Pin | **Socket**

Termination Type	Gender	Part Number	Inner Contacts Cross Section	Max Dia. Single Leader	L1 Approx.	Ø A ±0,05	Ø B ±0,1	Max Inner Current
Crimp	Pin (Male)	980-2002-551	AWG24	Ø 1.5mm	44.65	12.7	8.8	2 Amps
	Socket (Female)	980-2002-552				-		

Note: For additional Octogig signal contacts, please consult the factory.

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

Tooling

Twinax and Quadrax Tooling

Termination Type	Type	Contact Size	Type	Removal
Crimp (Cable)	RR-RR	8	-	323-7004-001 Cannon Plastic Tool
Crimp (Cable)	RR-RR	5	-	323-7011-000 Cannon Plastic Tool
Solder (PCB)	RR-RR	8	CIET 70369-8	CIET 70369-8

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

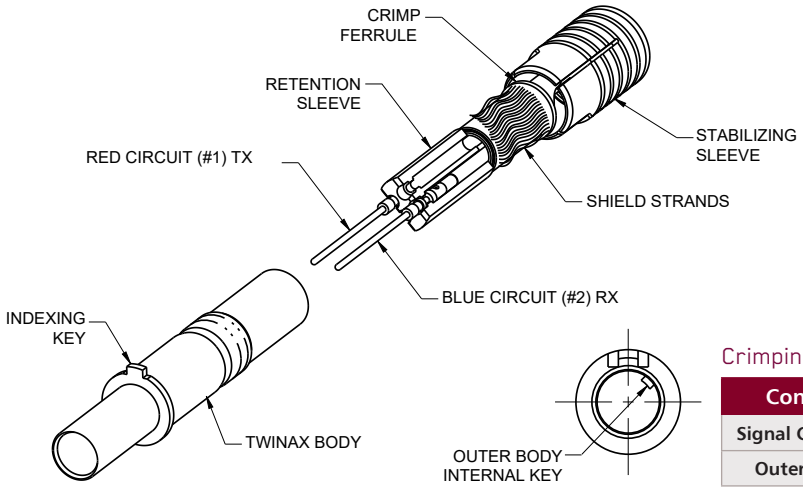
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

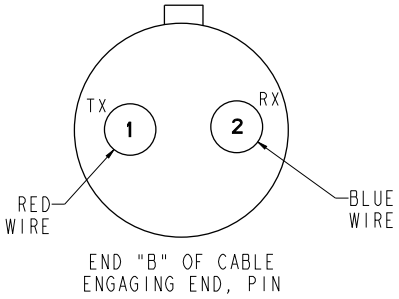
BKA (ARINC 600), KJAQ Twinax

Crimp Termination Instructions

Pin

ITT Part Number: 224-1001-005

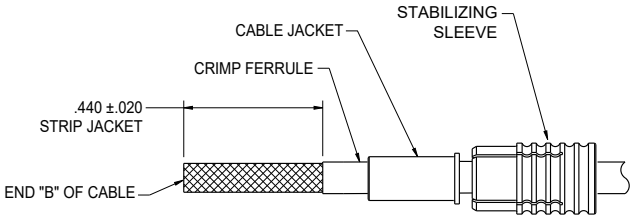




Crimping Tool Table

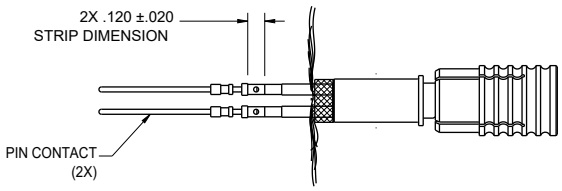
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide stabilizing sleeve and crimp ferrule over the cable.



Step 2 - Strip cable jacket .440 +/-.020

Caution: Use end "B" of cable, care must be taken not to nick the cable shield.



Step 3 - Comb out the cable shield; move it out of the way.

Step 4 - Cut off protective tape.

Step 5 - Mark the 2 wires at the strip dimension as illustrated above.

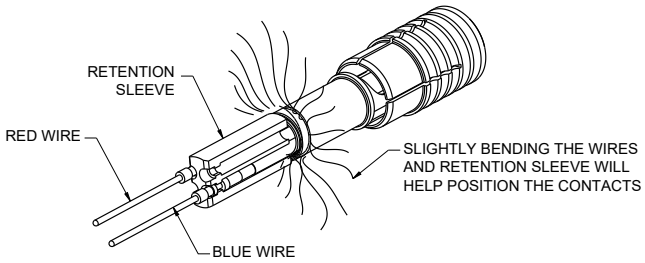
Step 6 - Splay the wires away from each other and cut off filler rod.

Step 7 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all two contact tips should be within .020 after crimping.

Step 8 - Place the two contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



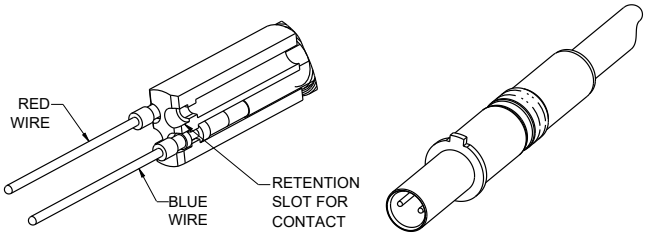
Step 9 - Slide the crimp ferrule forward, under the cable shield.

Step 10 - Align the yellow wire (#1) with the key on the shoulder of the Twinax body and partially insert prepared assembly into the Twinax body.

Caution: The insulator keyway must be aligned with internal key of outer body.

Step 11 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Step 12 - Complete the insertion of the insulator-contact sub-assembly int the body. Ensure the crimp ferrule is flush with outer body. Using the crimp tool M22520/5, and die set Y1999 or M22520/5-45 to crimp outer body at crimp area as shown below.



Step 13 - Crimp the outer body per Crimping Tool Table (using position A Hex Dieset .231")

Caution: Crimp length to be .270 +.000/-.025, as measured from the end of the crimp sleeve.

Step 14 - After installation of the Twinax into the Twinax splice, slide the sealing boot forward into the contact cavity until stop.

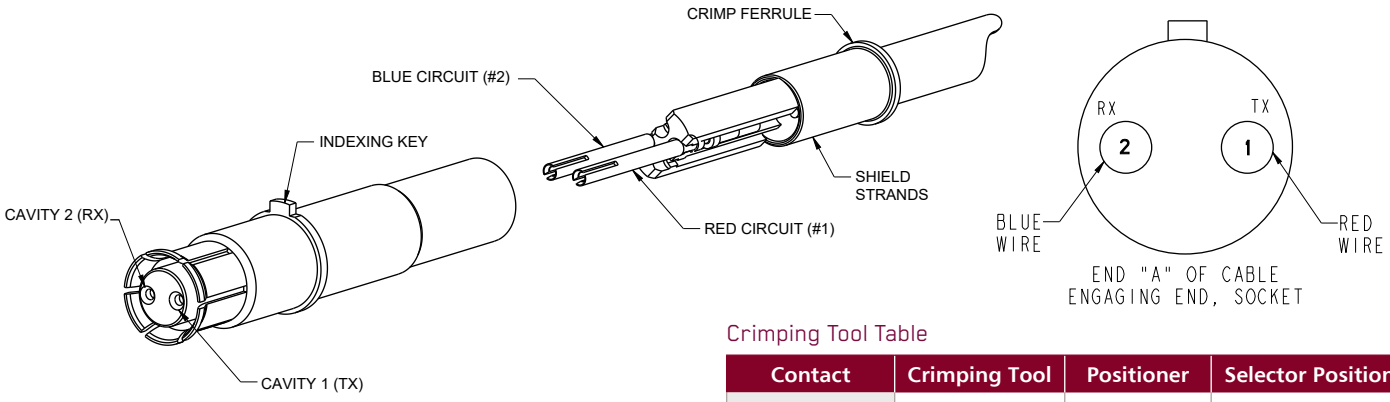
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

BKA (ARINC 600), KJAQ Twinax

Crimp Termination Instructions

Socket

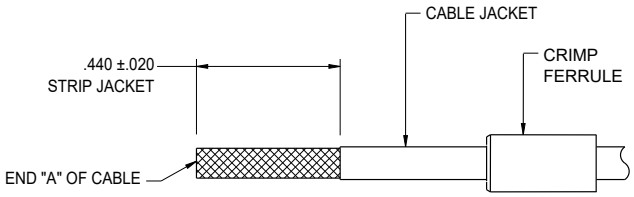
ITT Part Number: 244-0016-005



Crimping Tool Table

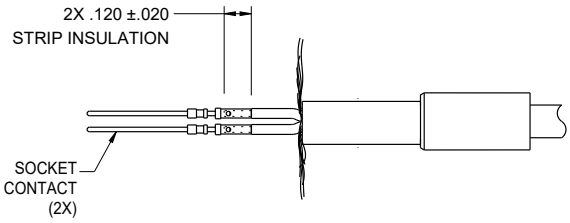
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide crimp ferrule over the cable.



Step 2 - Strip cable jacket .440 +/-.020

Caution: Use end "A" of cable, care must be taken not to nick the cable shield.



Step 3 - Comb out the cable shield; move it out of the way.

Step 4 - Cut off protective tape.

Step 5 - Mark the 2 wires at the strip dimension as illustrated above.

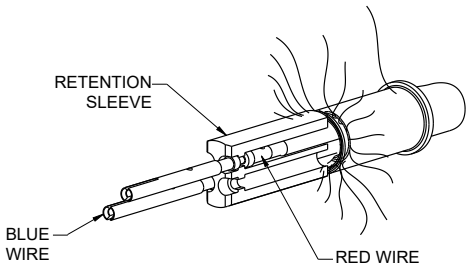
Step 6 - Splay the wires away from each other and cut off filler rod.

Step 7 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all two contact tips should be within .020 after crimping.

Step 8 - Place the two contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



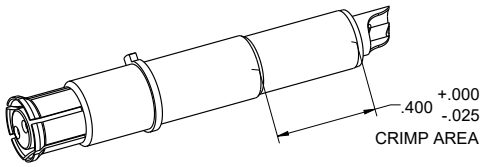
Step 9 - Slide the crimp ferrule forward, under the cable shield until it stops and captivates the shield between the crimp ferrule and the retention sleeve

Step 10 - Fold the shield back over the crimp ferrule, align the blue wire (#2) with the key on the shoulder of the Twinax body and partially insert thus far prepared assembly into the Twinax body.

Step 11 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 12 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 13 - Crimp the outer body per Crimping Tool Table (using selector position A)

Caution: Crimp length to be .400 +.000/-.025, as measured from the end of the crimp sleeve.

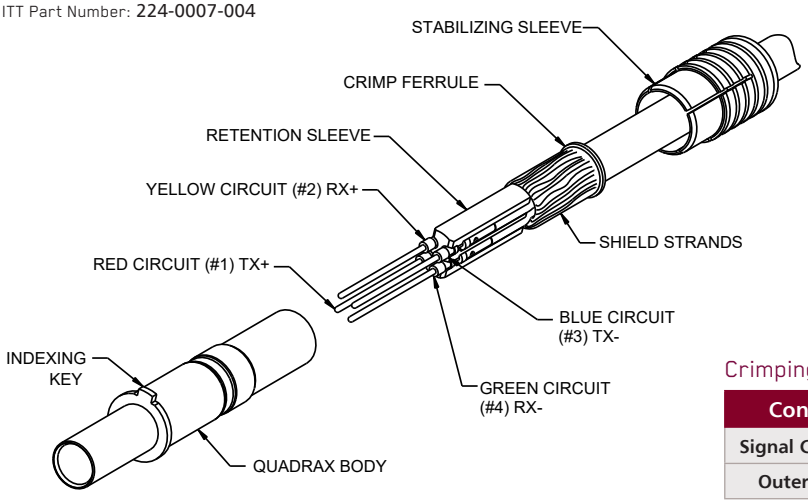
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

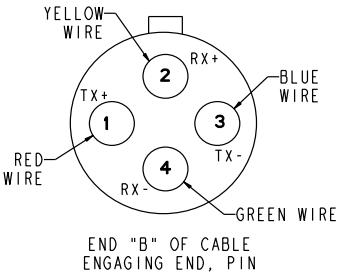
BKA (ARINC 600), KJAQ Quadrax

Crimp Termination Instructions

Pin

ITT Part Number: 224-0007-004

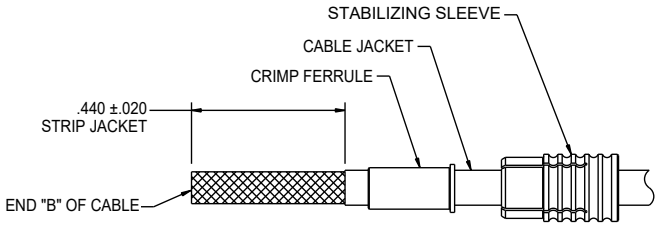




Crimping Tool Table

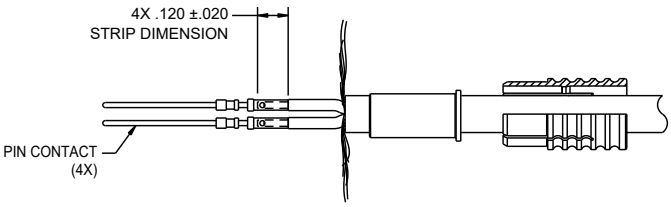
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide stabilizing sleeve and crimp ferrule over the cable.



Step 2 - Strip cable jacket .440 +/-.020

Caution: Use end "B" of cable, care must be taken not to nick the cable shield.



Step 3 - Comb out the cable shield; move it out of the way.

Step 4 - Cut off protective tape.

Step 5 - Mark the 4 wires at the strip dimension as illustrated above.

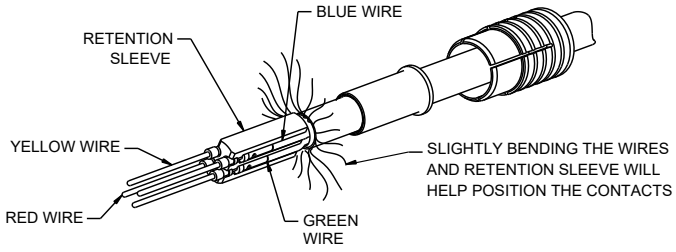
Step 6 - Splay the wires away from each other and cut off filler rod.

Step 7 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all four contact tips should be within .020 after crimping.

Step 8 - Place the four contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



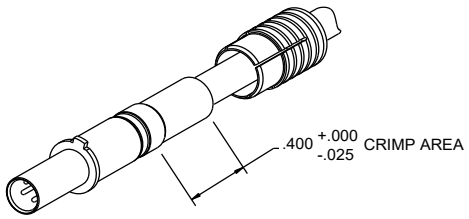
Step 9 - Slide the crimp ferrule forward, under the cable shield, until it stops and captivates the shield between the crimp ferrule and the retention sleve.

Step 10 - Fold the shield back over the crimp ferrule, align the yellow wire (#2) with the key on the shoulder of the Quadrax body and partially insert thus far prepared assembly into the Quadrax body.

Step 11 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 12 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 13 - Crimp the outer body per Crimping Tool Table (using selector position A)

Caution: Crimp length to be .400 +.000/-.025, as measured from the end of the crimp sleeve.

Step 14 - After installation of the Quadrax into the connector, slide the stabilizing sleeve forward into the contact cavity and snap it in place.

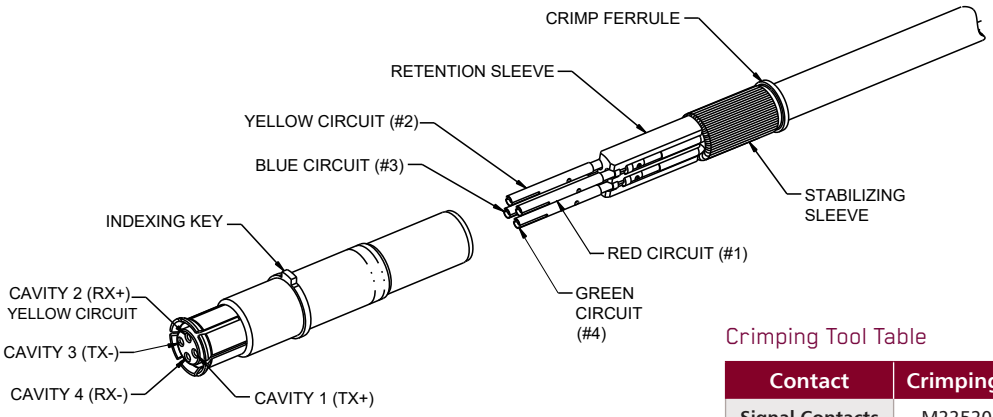
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

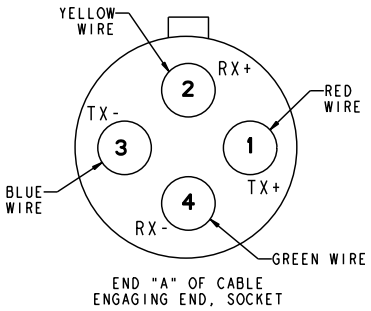
BKA (ARINC 600), KJAQ Quadrax

Crimp Termination Instructions

Socket

ITT Part Number: 244-0011-000

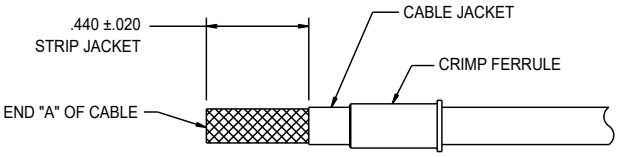




Crimping Tool Table

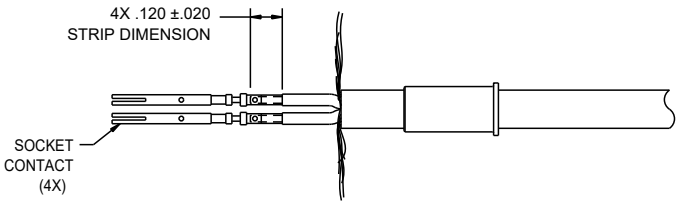
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide crimp ferrule over the cable.



Step 2 - Strip cable jacket .440 +/-.020

Caution: Use end "A" of cable, care must be taken not to nick the cable shield.



Step 3 - Comb out the cable shield; move it out of the way.

Step 4 - Cut off protective tape.

Step 5 - Mark the two wires at the strip dimension as illustrated above.

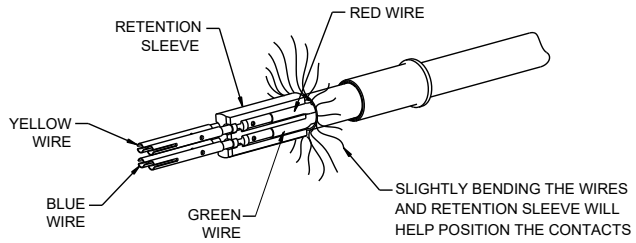
Step 6 - Splay the wires away from each other and cut off filler rod.

Step 7 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all two contact tips should be within .020 after crimping.

Step 8 - Place the four contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



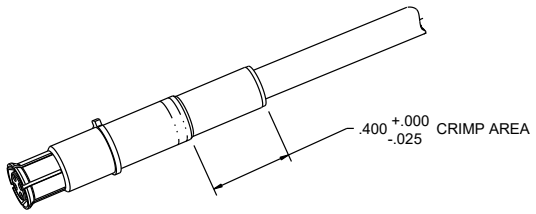
Step 9 - Slide the crimp ferrule forward, under the cable shield, until it stops and captivates the shield between the crimp ferrule and the retention sleve.

Step 10 - Fold the shield back over the crimp ferrule, align the yellow wire (#2) with the key on the shoulder of the Quadrax body and partially insert thus far prepared assembly into the Quadrax body.

Step 11 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 12 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 13 - Crimp the outer body per Crimping Tool Table (using selector position A)

Caution: Crimp length to be .400 +.000/-.025, as measured from the end of the crimp sleeve.

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

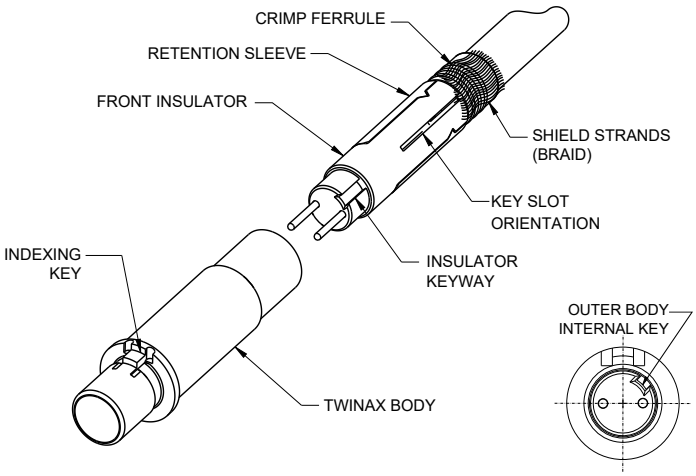
cannon

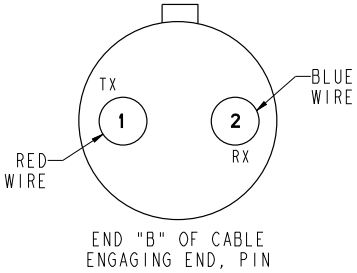
BACC47, KJBQ Twinax

Crimp Termination Instructions

Pin

ITT Part Number: 224-1001-006

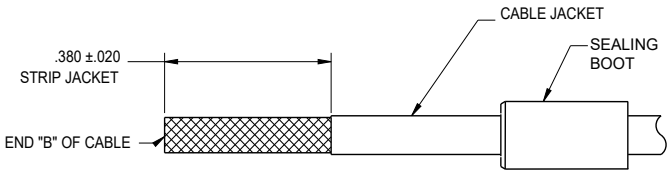




Crimping Tool Table

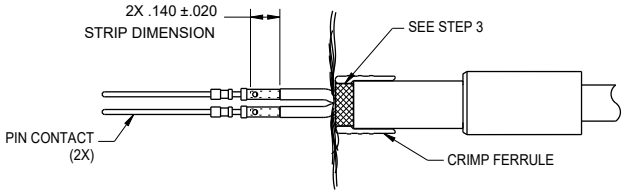
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide sealing boot over the cable.



Step 2 - Strip cable jacket .380 +/-.020

Caution: Use end "B" of cable, care must be taken not to nick the cable shield.



Step 3 - Slide crimp ferrule over cable braid until cable jacket stop at intenal shoulder as illustrated above.

Step 4 - Comb out the cable braid only; fold the braid back over crimp ferrule.

Step 5 - Trim and remove aluminun foil stripes and cut off protective tape.

Step 6 - Mark the 2 wires at the strip dimension as illustrated above.

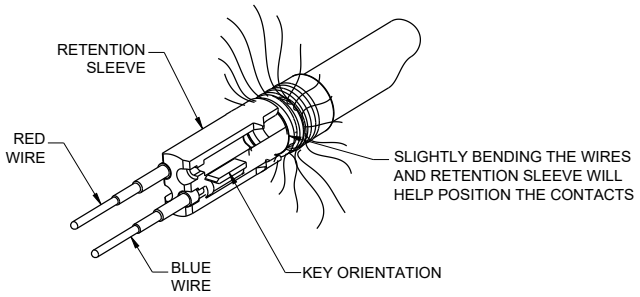
Step 7 - Splay the wires away from each other and cut off filler rod.

Step 8 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all two contact tips should be within .020 after crimping.

Step 9 - Place the two contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown.



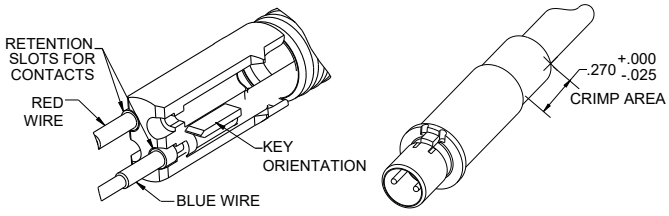
Step 10 - Install front insulator over signal contacts and retention sleeve.

Step 11 - Align the blue wire (#2) perpendicular on the right with the key on the shoulder of the Twinax body and partially insert prepared assembly into the Twinax body.

Caution: The insulator keyway must be aligned with internal key of outer body.

Step 12 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Step 13 - Complete the insertion of the insulator-contact sub-assembly into the body. Ensure the crimp ferrule is flush with outher body. Using the crimp tool M22520/5 and die set Y 1999 or M22520/5-45 to crimp outer body at crimp area as shown below.



Step 14 - Crimp the outer body per Crimping Tool Table (using position A Hex Dieset .231")

Caution: Crimp length to be .270 +.000/-.025, as measured from the end of the crimp sleeve.

Step 15 - After installation of the Twinax into the Twinax splice, slide the sealing boot forward into the contact cavity until stop.

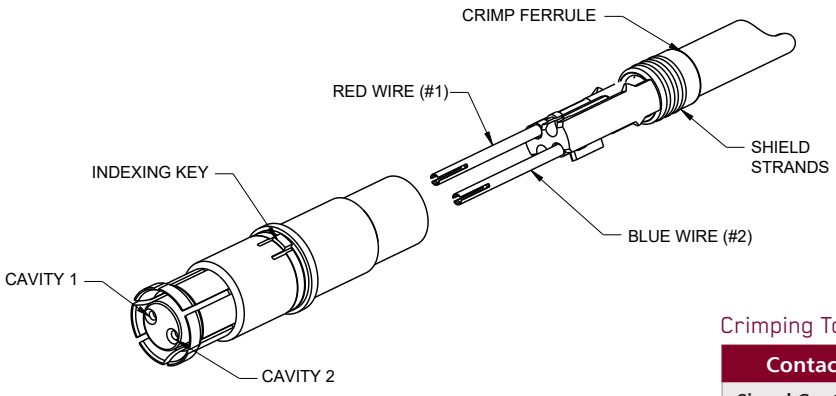
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

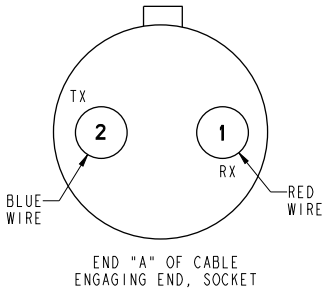
BACC47, KJBQ Twinax

Crimp Termination Instructions

Socket

ITT Part Number: 244-0016-006

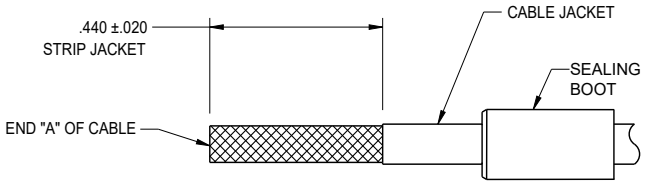




Crimping Tool Table

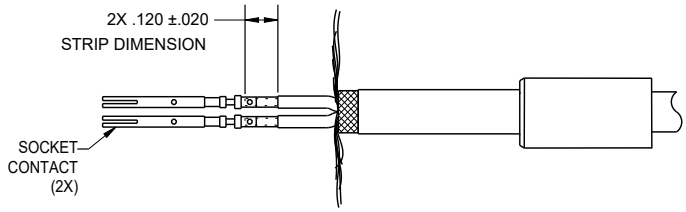
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide sealing boot over the cable.



Step 2 - Strip cable jacket .440 +/-.020

Caution: Use end "A" of cable, care must be taken not to nick the cable shield.



Step 3 - Comb out the cable shield; move it out of the way.

Step 4 - Cut off protective tape.

Step 5 - Mark the two wires at the strip dimension as illustrated above.

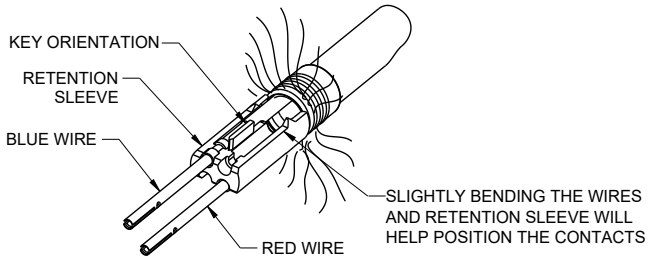
Step 6 - Splay the wires away from each other and cut off filler rod.

Step 7 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all two contact tips should be within .020 after crimping.

Step 8 - Place the two contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



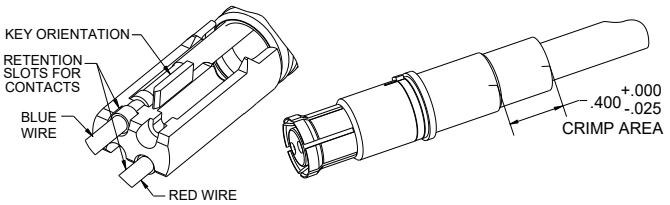
Step 9 - Slide the crimp ferrule forward, under the cable shield, until it stops and captivates the shield between the crimp ferrule and the retention sleeve.

Step 10 - Fold the shield back over the crimp ferrule, align the blue wire (#2) with the key on the shoulder of the Twinax body and partially insert thus far prepared assembly into the twinax body.

Step 11 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 12 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 13 - Crimp the outer body per Crimping Tool Table (using position A)

Caution: Crimp length to be .400 +.000/-.025, as measured from the end of the crimp sleeve.

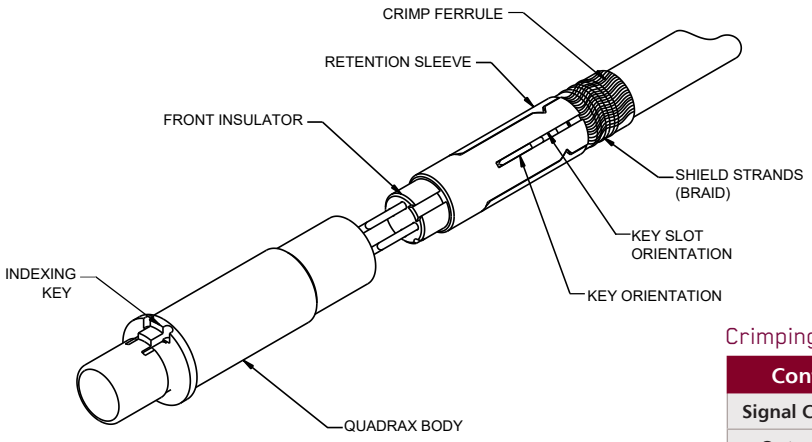
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

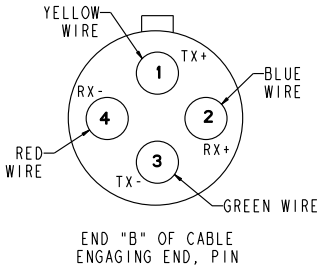
BACC47, KJBQ Quadrax

Crimp Termination Instructions

Pin

ITT Part Number: 224-0009-000



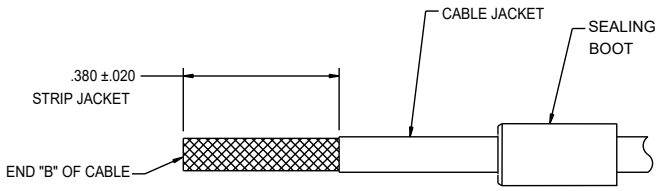


END "B" OF CABLE ENGAGING END, PIN

Crimping Tool Table

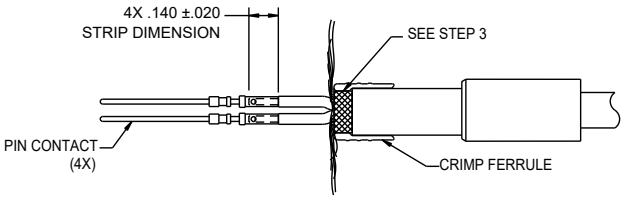
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide sealing boot and crimp ferrule over the cable.



Step 2 - Strip cable jacket .380 +/-.020

Caution: Use end "B" of cable, care must be taken not to nick the cable shield.



Step 3 - Slide crimp ferrule over cable braid until cable jacket stop at intenal shoulder as illustrated above.

Step 4 - Comb out the cable braid; fold the braid back over crimp ferrule.

Step 5 - Trim aluminun foil stripes and cut off protective tape.

Step 6 - Mark the 4 wires at the strip dimension as illustrated above.

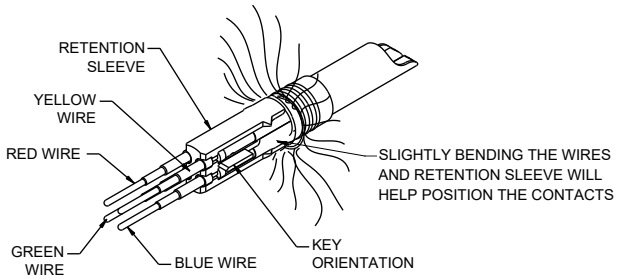
Step 7 - Splay the wires away from each other and cut off filler rod.

Step 8 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all four contact tips should be within .020 after crimping.

Step 9 - Place the four contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



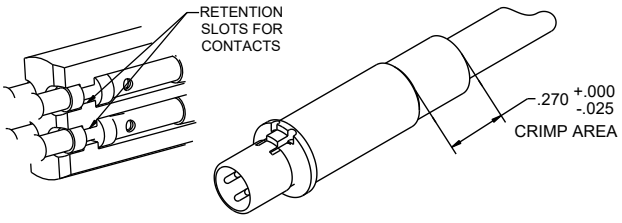
Step 10 - Install front insulator over signal contacts and retention sleeve.

Step 11 - Align the yellow wire (#1) with the key on the shoulder of the Quadrax body and partially insert thus far prepared assembly into the Quadrax body.

Step 12 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 13 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 14 - Crimp the outer body per Crimping Tool Table (using selector position A)

Caution: Crimp length to be .270 +.000/-.025, as measured from the end of the crimp sleeve.

Step 15 - After installation of the Quadrax into the connector, slide the sealing boot forward into the contact cavity until stop.

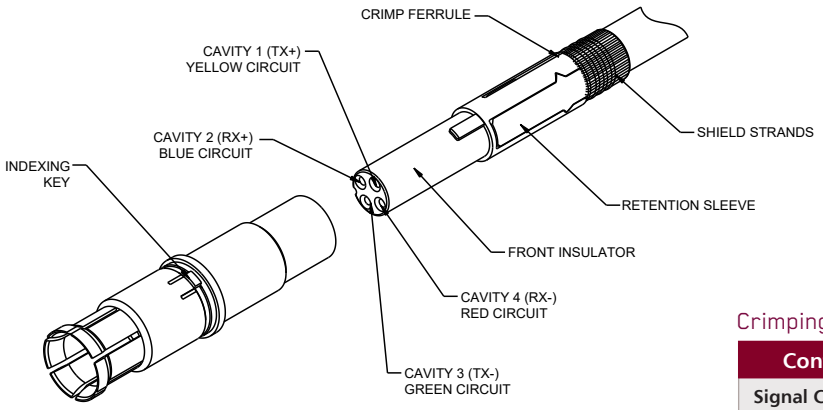
Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

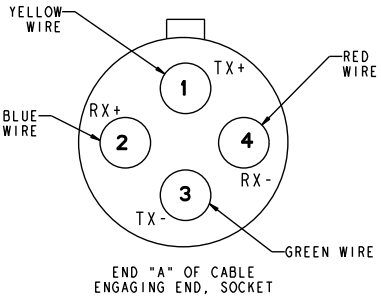
BACC47, KJBQ Quadrax

Crimp Termination Instructions

Socket

ITT Part Number: 224-0015-000

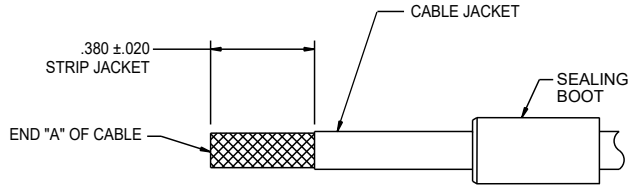




Crimping Tool Table

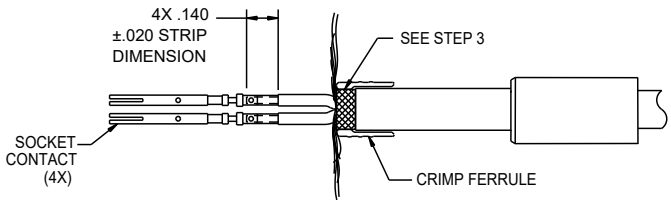
Contact	Crimping Tool	Positioner	Selector Position
Signal Contacts	M22520/2-01	M22520/2-37	5
Outer body	M22520/5-01	M22520/5-45	A 0.231 ±0.003

Step 1 - Slide crimp ferrule over the cable.



Step 2 - Strip cable jacket .380 +/-.020

Caution: Use end "A" of cable, care must be taken not to nick the cable shield.



Step 3 - Slide crimp ferrule over cable braid until cable jacket stop at intenal shoulder as illustrated above.

Step 4 - Comb out the cable braid; fold the braid back over crimp ferrule.

Step 5 - Trim aluminun foil stripes and cut off protective tape.

Step 6 - Mark the 4 wires at the strip dimension as illustrated above.

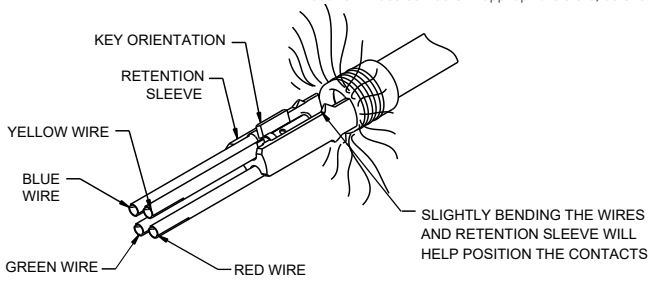
Step 7 - Splay the wires away from each other and cut off filler rod.

Step 8 - Strip the insulation of the wires and crimp the signal contacts as per the Crimping Tool Table leaving no gap between insulator and the contacts.

Caution: Care must be taken not to damage the wire insulation and not to nick the wire strands. Also, all four contact tips should be within .020 after crimping.

Step 9 - Place the four contacts in the slots of the contact retention sleeve and snap them into position as illustrated below.

Caution: Place contacts in appropriate slots, as shown



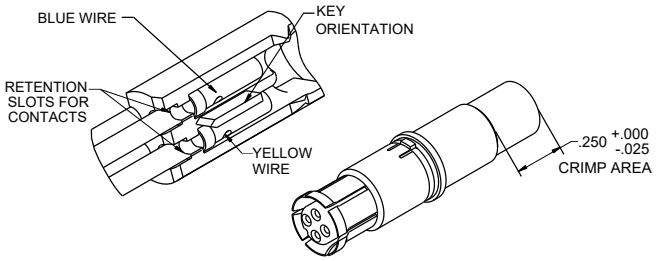
Step 10 - Install front insulator over signal contacts and retention sleeve.

Step 11 - Align the yellow wire (#1) with the key on the shoulder of the Quadrax body and partially insert thus far prepared assembly into the Quadrax body.

Step 12 - Trim the shield strands flush with the shoulder of the crimp ferrule.

Caution: Care must be taken not to damage the crimp sleeve.

Step 13 - Close the M22520/5, M22520/5-45, cavity A over the cable behind the crimp area and use the tool to complete the insertion of the contact assembly into the body.



Step 14 - Crimp the outer body per Crimping Tool Table (using selector position A)

Caution: Crimp length to be .250 +.000/-.025, as measured from the end of the crimp sleeve.

Step 15 - After installation of the Quadrax into the connector, slide the sealing boot forward into the contact cavity until stop.

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

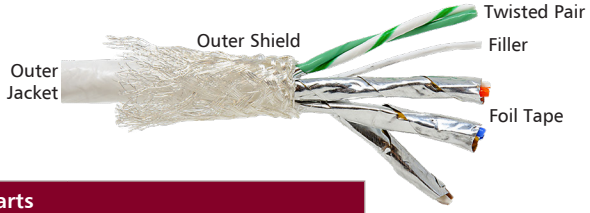
OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable 10 Meter Assembly

Parts

Female Connector (Socket) – 980-2002-552

Male connector (Pin) – 980-2002-551

10



Connector Parts			
1	Connector body	6	Retention cap
2	Retention sector press tool	7	O-Ring
3	Insert	8	Retention sectors (4)
4	Compression sleeve	9	Contacts (8)
5	Support sleeve	10	Cable RCN9047-26

Tools Needed

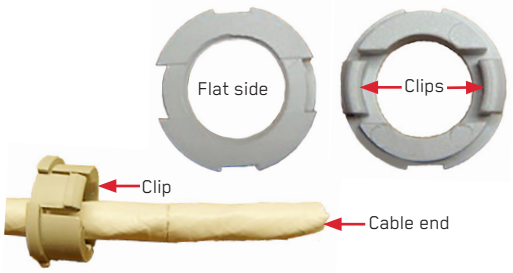
Tools Needed
Round cable cutters
Small scissors
Flush cutters
Plastic pick
Braid brush
Tweezers
Crimp Die
Crimper DCM-M22520/2-01

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

OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable Assembly - Female Connector (Socket) 980-2002-552

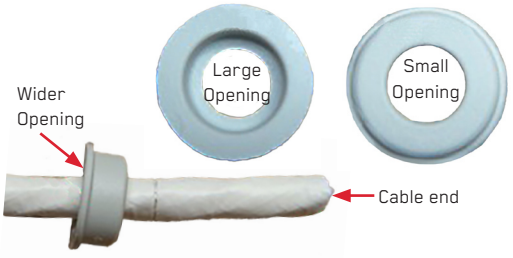
Step 1 - Cut cable RCN9047-26 to 392.20" using round cable cutters
a. To get the cut length for an assembly with one male and one female end, subtract 1.85" from the total finish length of the assembly
Example: A 1 MT assembly would have a cable cut length of 37.52"

Step 2 - Slide the retention cap onto the cable with the flat edge towards the cable and 2 clips towards the end.



Step 3 - Slide the O-Ring onto the cable next.
Note: the exit of this connector is larger than the cable diameter.
It may be necessary to install build up shrink tubing between the O-Ring and the support sleeve or use a shrink boot for proper strain relief.

Step 4 - Slide the support sleeve onto the cable with the larger opening towards the cable and the smaller opening towards the cable end.



Step 5 - Strip the left end at .86" using one of the following methods

a. Laser strip (This may require some set up).

b. Place a piece of ½" Kapton tape with the outside edge at .86".

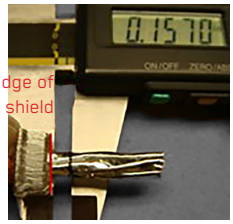
b1. Using small scissor, carefully cut the outer jacket in 2 places, down to the edge of the tape.

b2. Cut the two flaps off at the edge of the tape using flush cutters.

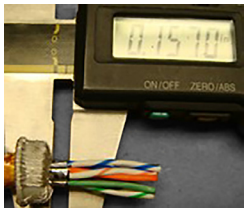
Step 6 - Brush out the outer shield using a braid brush.

Step 7 - Slide the support sleeve up to the edge of the outer jacket and fold the shield back over it. Secure the shield ends with Kapton tape.

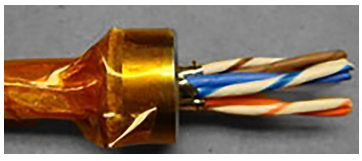
Step 8 - Mark the foil tape of each twisted pair at .157" from the edge of the outer braid.



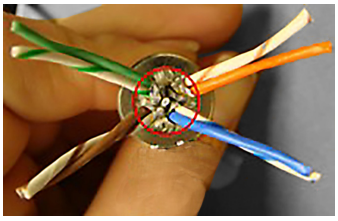
Step 9 - Cut off the foil tape down to this mark.



Step 10 - Slide the compression sleeve over the wires with the larger opening facing the cable and the smaller opening facing the end of the wires. Fit compression sleeve over the shield wires and support sleeve. Tape compression sleeve in place.



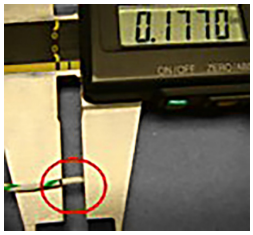
Step 11 - Fan out the wires around the cable and cut off the white filler as far down as possible.

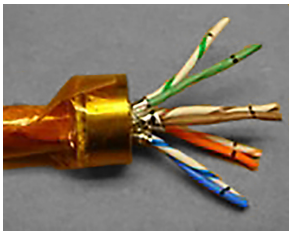


Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable Assembly - Female Connector (Socket) 980-2002-552

Step 12 - Mark each wire at 0.177" from the end

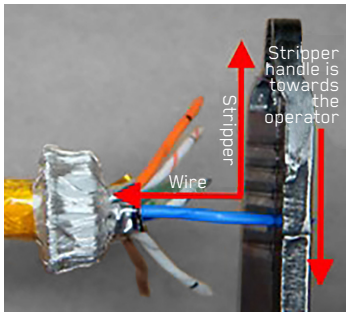


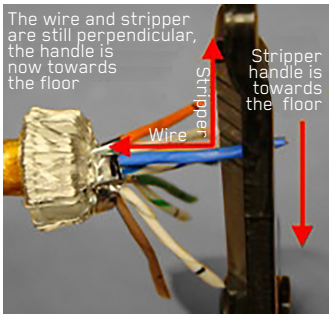


Step 13 - Strip each wire at the .177" mark on the 26awg slot of the hand stripper

a. A good strip is achieved by making sure the wire is straight and the strippers are perpendicular to the wire. To ensure no wire damage and a clean strip: close strippers around the wire, open slightly, rotate the hand holding the strippers a 1/4 turn, close again.

Caution: Do not use the strippers to pull off the jacket slug





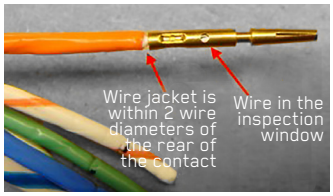
Step 14 - One wire at a time:

a. Remove the jacket slug.

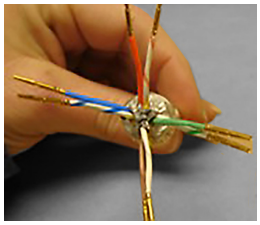
b. Slide contact from 980-2002-552 connector kit onto the wire

c. Crimp contact onto wire using M22520/2-01 crimper, K1999 Die and selector set to 4.

Note: A good crimp will have wires visible in the inspection window and wire jacket within 2 wire diameters of the rear of the contact.

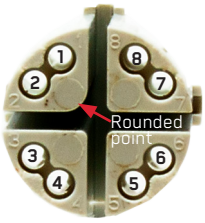


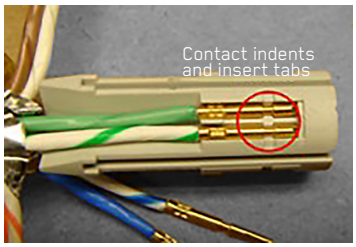
Step 15 - Fan the wires out around the cable so that the insert will sit inside the group of wires.



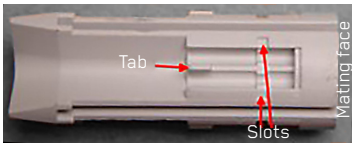
Step 16 - Insert each set of twisted pairs into the four sections of the connector insert. (Wire color and location may depend on individual requirements though 1 to 1 wiring is recommended). The indents in the contacts will fit in between the two tabs in each wire slot of the insert.

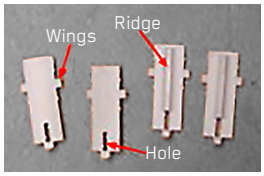
a. Positions 1 and 2 are located on the section with the rounded point in the center.



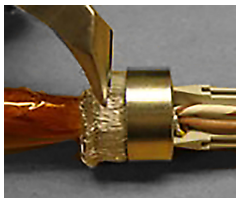


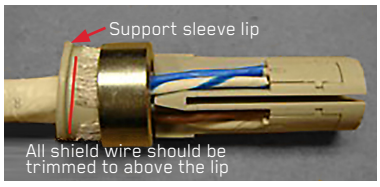
Step 17 - Install the retention sectors over the contacts. The two wings should fit into the slots nearer to the mating face and the hole will line up with the tab nearer the rear of the contacts. The side with the ridge will face towards the insert.



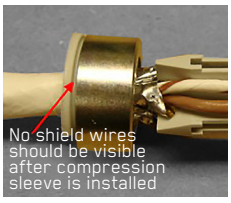


Step 18 - Remove the Kapton tape from around the compression sleeve and slide the sleeve up off of the shield. Trim the shield to just above the lip of the support sleeve using flush cutters. Remove the Kapton tape holding the shield ends, the cut off portion of the shield should come off with the tape.



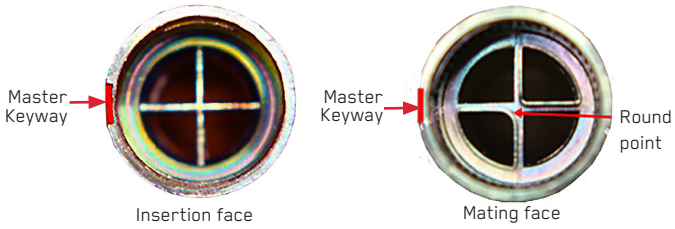


Step 19 - Slide the compression sleeve back down over the shield and support sleeve. No shield should be visible after the compression sleeve is installed.



OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable Assembly - Female Connector (Socket) 980-2002-552

Step 20 - Lining up the section of the insert with the round point in the center to the section divider of the connector body with the round point, insert the insert into the connector body. The master keyway will be to the right of the section with the round point.
a. You will have to look at the mating face of the connector body, the insertion face of the body has no round point.



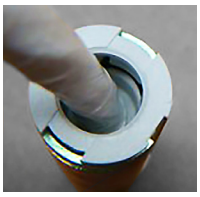
Step 21 - The support sleeve may not want to fully seat on the body. In this case used the back of a plastic pick to push the support sleeve down inside the body until fully seated. The rear edge of the support sleeve will be below the two cut outs in the connector body.


Insert fully seated

Step 22 - If you have installed build up tubing, slide it up to the rear of the support sleeve and shrink. Take care not to melt the support sleeve and allow the tubing to cool before moving on to the next steps.

Step 23 - Slide the O-Ring up and then push it down inside of the connector body to rest on top of the support sleeve. You may need to use the back of a plastic pick to get the ring to seat.

Step 24 - Slide the retention cap up to the back of the connector body. Line up the clips with the cut outs on the connector body. Pushing on two sides, press the retention cap into the connector body until the 2 clips pop out into the cut outs.
a. This step can be a little difficult. You may need to put the connector into a vise and press down on the retention cap with a pair of PTFE wrapped pliers to get the clips to fully engage.

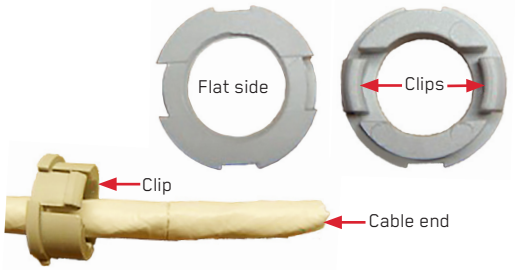


Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable
10 Meter Assembly - Male Connector (Pin) 980-2002-551

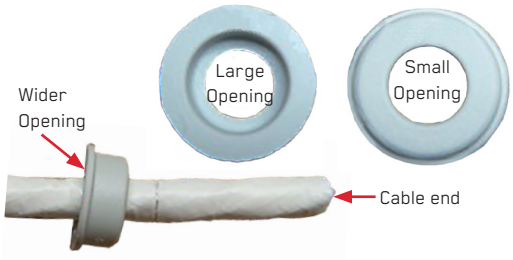
Step 1 - Cut cable RCN9047-26 to 392.20" using round cable cutters
a. To get the cut length for an assembly with one male and one female end, subtract 1.85" from the total finish length of the assembly
Example: A 1 MT assembly would have a cable cut length of 37.52"

Step 2 - Slide the Retention Cap onto the cable with the flat edge towards the cable and 2 clips towards the end.



Step 3 - Slide the O-Ring onto the cable next.
Note: the exit of this connector is larger than the cable diameter.
It may be necessary to install build up shrink tubing between the O-Ring and the support sleeve or use a shrink boot for proper strain relief.

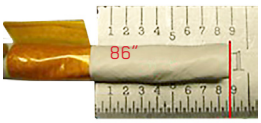
Step 4 - Slide the support sleeve onto the cable with the larger opening towards the cable and the smaller opening towards the cable end.



Step 5 - Strip the left end at .86" using one of the following methods

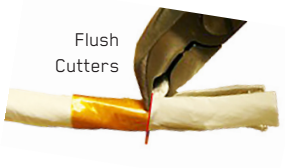
a. Laser strip (This may require some set up).

b. Place a piece of ½" Kapton tape with the outside edge at .86".



b1. Using small scissor, carefully cut the outer jacket in 2 places, down to the edge of the tape.

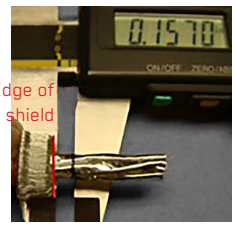
b2. Cut the two flaps off at the edge of the tape using flush cutters.



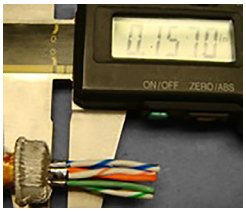
Step 6 - Brush out the outer shield using a braid brush.

Step 7 - Slide the support sleeve up to the edge of the outer jacket and fold the shield back over it. Secure the shield ends with Kapton tape.

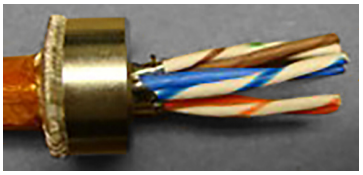
Step 8 - Mark the foil tape of each twisted pair at .157" from the edge of the outer braid.

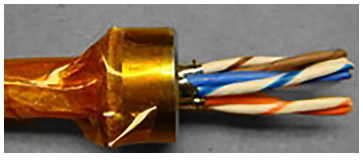


Step 9 - Cut off the foil tape down to this mark.

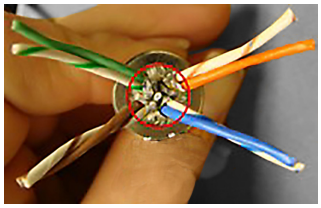


Step 10 - Slide the compression sleeve over the wires with the larger opening facing the cable and the smaller opening facing the end of the wires. Fit compression sleeve over the shield wires and support sleeve. Tape compression sleeve in place.





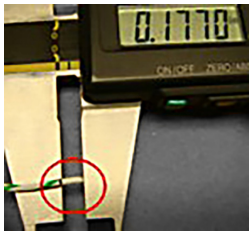
Step 11 - Fan out the wires around the cable and cut off the white filler as far down as possible.

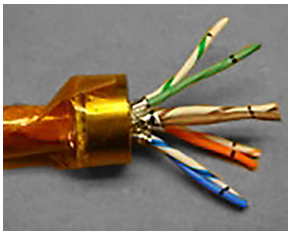


Dimensions shown in inches and (mm)
Specifications and dimensions subject to change

OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable 10 Meter Assembly - Male Connector (Pin) 980-2002-551

Step 12 - Mark each wire at 0.177" from the end

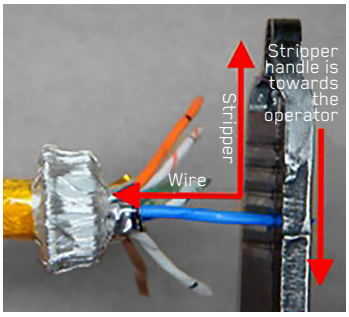


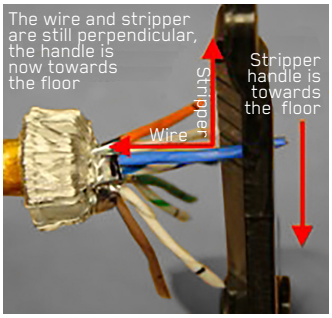


Step 13 - Strip each wire at the .177" mark on the 26awg slot of the hand stripper

a. A good strip is achieved by making sure the wire is straight and the strippers are perpendicular to the wire. To ensure no wire damage and a clean strip: close strippers around the wire, open slightly, rotate the hand holding the strippers a 1/4 turn, close again.

Caution: Do not use the strippers to pull off the jacket slug





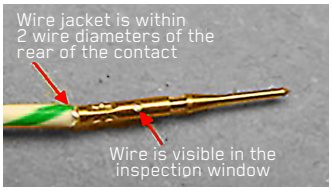
Step 14 - One wire at a time:

a. Remove the jacket slug.

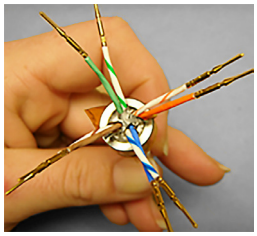
b. Slide contact from 980-2002-551 connector kit onto the wire

c. Crimp contact onto wire using M22520/2-01 crimper, K1999 Die and selector set to 4.

Note: A good crimp will have wires visible in the inspection window and wire jacket within 2 wire diameters of the rear of the contact.

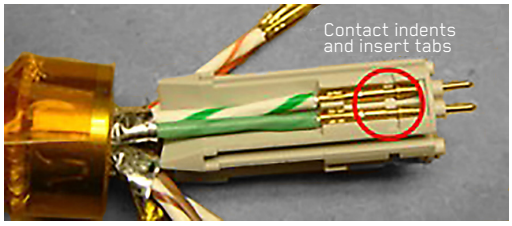


Step 15 - Fan the wires out around the cable so that the insert will sit inside the group of wires.

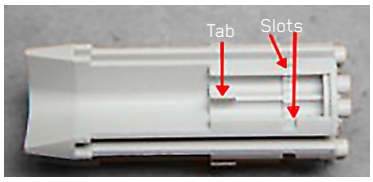


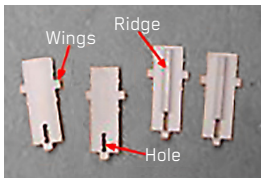
Step 16 - Insert each set of twisted pairs into the four sections of the connector insert. (Wire color and location may depend on individual requirements though 1 to 1 wiring is recommended). The indents in the contacts will fit in between the two tabs in each wire slot of the insert.

a. Positions 1 and 2 are located on the section with the rounded point in the center

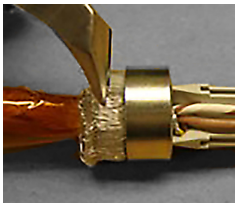


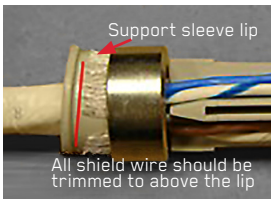
Step 17 - Install the retention sectors over the contacts. The two wings should fit into the slots nearer to the mating face and the hole will line up with the tab nearer the rear of the contacts. The side with the ridge will face towards the insert.



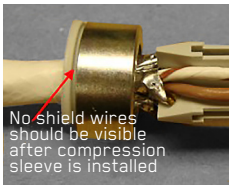


Step 18 - Remove the Kapton tape from around the compression sleeve and slide the sleeve up off of the shield. Trim the shield to just above the lip of the support sleeve using flush cutters. Remove the Kapton tape holding the shield ends, the cut off portion of the shield should come off with the tape.





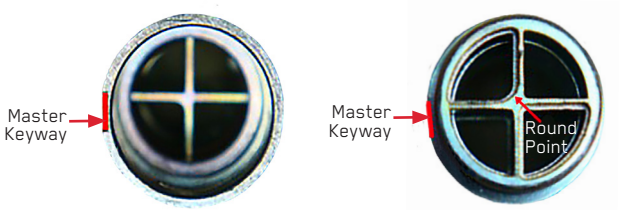
Step 19 - Slide the compression sleeve back down over the shield and support sleeve. No shield should be visible after the compression sleeve is installed.



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

OctoGig™ Connectors and Gore™ RCN9047-26 Ethernet Cable 10 Meter Assembly - Male Connector (Pin) 980-2002-551

Step 20 - Lining up the section of the insert with the round point in the center to the section divider of the connector body with the round point, insert the insert into the connector body. The master keyway will be to the right of the section with the round point.
a. You will have to look at the mating face of the connector body, the insertion face of the body has no round point.



Rear face | Mating face

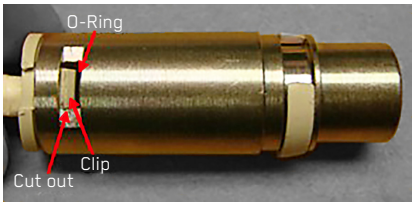
Step 21 - The support sleeve may not want to fully seat on the body. In this case used the back of a plastic pick to push the support sleeve down inside the body until fully seated. The rear edge of the support sleeve will be below the two cut outs in the connector body.

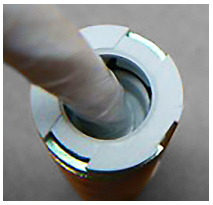
Insert fully seated

Step 22 - If you have installed build up tubing, slide it up to the rear of the support sleeve and shrink. Take care not to melt the support sleeve and allow the tubing to cool before moving on to the next steps.

Step 23 - Slide the O-Ring up and then push it down inside of the connector body to rest on top of the support sleeve. You may need to use the back of a plastic pick to get the ring to seat.

Step 24 - Slide the retention cap up to the back of the connector body. Line up the clips with the cut outs on the connector body. Pushing on two sides, press the retention cap into the connector body until the 2 clips pop out into the cut outs.
a. This step can be a little difficult. You may need to put the connector into a vise and press down on the retention cap with a pair of PTFE wrapped pliers to get the clips to fully engage.





About ITT Cannon

ITT is a diversified leading manufacturer of highly engineered critical components and customized technology solutions for the energy, transportation and industrial markets. Building on its heritage of innovation, ITT partners with its customers to deliver enduring solutions to the key industries that underpin our modern way of life. Founded in 1920, with employees in more than 35 countries and sales in a total of approximately 125 countries.

For more information visit itt.com

ITT's Cannon brand offers a product portfolio that remains one of the most extensive in the industry. Continuous investment in technology, research and investment have enabled us to provide new, innovative solutions to markets including:

- **Commercial Aerospace**
- **Military & Defense**
- **Industrial**
- **Medical**

When you specify an ITT Cannon interconnect solution, you can rely on products 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.

Six Sigma Manufacturing

ITT Cannon operates manufacturing facilities in the United States, Germany, Italy, Mexico, China and Japan, all of which have particular product area strengths that allow ITT Cannon to offer a truly global presence 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 an industry leader in harsh environment interconnect applications, ITT's world class engineering teams 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. When custom connectors are required, we collaborate with clients and partners with a goal to design the most reliable, cost-effective solution possible. Our engineering and product management teams provide a thorough analysis of proposed solutions, ensuring our customers receive the right solution for their program and application needs.

RoHS Compliance Information

ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon product portfolio to meet the requirements of the European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances initiative. As appropriate, specific Cannon 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.

RoHS COMPLIANT PART NUMBERS

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

cannon

Product Safety Information

This note must be read in conjunction with the Product Data Sheet / Catalog. Failure to observe the advice in this information sheet and the operating conditions specified in the Product Data Sheet / Catalog could result in hazardous situations.

1. MATERIAL CONTENT & 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 over- heating 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.

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.

6. IMPORTANT GENERAL INFORMATION

6.1 Air and creepage paths/operating voltage. The admissible operating voltages depend on the individual applications and the valid national and other applicable safe- ty 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.

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

6.3 Other important information. Cannon continuously endeavors to improve their products. Therefore, Cannon products may deviate from the description, technical data and shape as shown in this catalog and data sheets.

7. MISCELLANEOUS

"Cannon" and "Veam" are brands of ITT, Inc. ("ITT"). ITT's connector products are intended to be used in accordance with the specifications in this publication (and any other relevant publications that are applicable to the specific product). Any use or application that deviates from the stated operating specifications is not recommended and may be unsafe. No information and data contained in this publication shall be construed to create any liability on the part of ITT or its successors, assigns, officers, directors, employees, affiliates, and agents, including, but not limited to, any liability for any patent infringements or other rights of third parties which may result from its use. Any new issue of this publication shall automatically invalidate and supersede all previous issues. Reprinting this publication is generally permitted, provided that ITT's prior written consent is obtained, and the source is indicated. This publication is not to be construed as an offer. It is intended merely as an invitation to make an offer. Product availability, prices, and delivery dates are exclusively subject to ITT's order confirmation form; the same applies to orders based on development samples delivered. Please refer to ITT's Terms and Conditions of Sale located at www.ittcannon.com for the full text of the terms and conditions that apply to ITT's connector products. Commodities in this catalogue may be controlled for export by the International Traffic in Arms Regulations (ITAR) and Export Administration Regulations (EAR) when specifically designed, modified, or configured for articles controlled by the United States Government.

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

Additional rugged, reliable and proven connector solutions from ITT Cannon

C5 Warrior Series

Ultra-High-Density, 10 Gbps Solution, 4 times smaller than D38999 connectors for USB-C, DisplayPort, HDMI & Gb Ethernet protocols

Cu Light Series

Size #8 TOSA-ROSA for 10 Gbps Copper-to-Fiber conversion in military circular connectors

APD Series

- 1 to 51-way layouts
- Fully plastic connector
- High power & high voltage
- Sealing: IP67 / IP69K

CA Bayonet Series

- 1 to 140 contact arrangements
- Shell size #10SL to #36
- Reverse bayonet up to IP69K
- RoHS, Reach, Cad-free Plating

CA Threaded / 5015 Series

- 5 polarizations
- Individual wire sealing grommet
- RoHS compliant options
- MIL-DTL 5015 (SAE-AS50151)

HDx™ Series

- High-Density, small form factor
- High speed data - USB® 3.1 Gen1 up to 5Gbit/s, Ethernet up to 10Gbit/s, HDMI® up to 8.16 Gbit/s

KP Series

- 10 shell size, with up to 40 layouts from 2 to 61 contacts
- Sealing up to IP67
- VG95238 & MIL-DTL-26482

KJ Series (38999-style)

- High contact density pin count
- Dual Flange & COTS Panel Mounts
- Fiber Optic, Hermetic, Filter, OctoGig, Twinax, & Quadrax layouts

MKJ Series

- High-density, miniature footprint
- UNC thread, double start, triple start, bayonet, breakaway and clip lock latching
- GOSSRA and Nett Warrior

Nemesis Series

- 20+ meter sealing
- Dual coupling or Breakaway
- Power, signal & data
- Blind mating design

Trident Series

- Plastic & shielded metal variants
- Mixed power and signal layouts
- Sealing up to IP67
- All ranges meet UL 94 V-0

Veam CIR/FRCIR Series

- 1-159 contacts up to 350A
- RoHS or Reach plating
- Per EN 45545-2 NFPA 130
- Power, signal, fiber, or high-speed

Universal Contact

- 0.3N contact force/ 0.1mm of deflection
- Surface Mount contact 1.3-4.6mm
- Low contact resistance

ARINC Rack & Panel Series

- ARINC 404 and 600, blind mate with 1, 3, 4, & 6 gang configurations.
- Crimp, Quadrax, OctoGig, power, PCB & wire wrappable post contacts.

Nano Series

- PCB or Cabling with 9-51 contacts
- 0.025" contact spacing
- 1 amp contact rating

D-Sub Series

- Mixed Signal / Power, M24308, Crimp, Solder, PC Tail, Double Density, Filter/ Hermetic
- Up to 104 contact

Micro Series

- High Temperature (+230°C)
- Low profile configuration
- Mixed power, coax and signal layouts & M83513

CTC Series

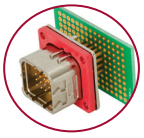
- 8-way to 24-way layouts
- Simple to install and maintain
- Hand insertable contacts
- Up to IP69K with positive locking

DL Series

- High pin count: 60-440 layouts
- Resilient contact with wiping action directly onto PCB pad
- Min. 10,000 mating cycles

QLC Series

- Min. 20,000 mating cycles
- High pin count: 60-440 layouts
- Single handed locking and actuation
- EMI/RFI shielding



RPR Series (EN4165-style)

- ARINC 809-compatible
- Precision PCB tail alignment
- Front release, rear removable insert
- Straight and right angle contacts

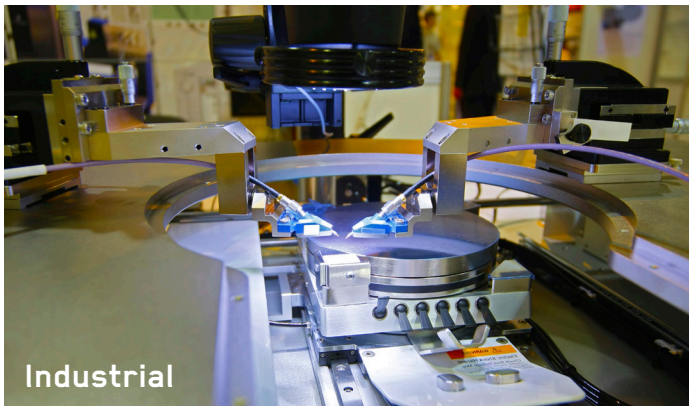
High Speed Termini

- Quadrax, OctoGig™, RF, Twinax, Fiber, HDMI, USB 3.0
- Rapid data from Cat5 to Gb Ethernet to HDMI

No Profile Series

- High-density, pogo pad solutions with magnetic, breakaway, spring probe or screw-lock coupling designs.
- High-mating systems & sealing level

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



ITT Cannon's connector portfolio

is one of the most extensive in the industry, offering customers a range of off-the-shelf and customized interconnect solutions for multiple markets and applications. Visit ittcannon.com

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

Connect with your ITT Cannon representative today or visit us at ittcannon.com

Connect with the experts

We deliver high performance, harsh environment interconnect solutions that enable the transfer of data, signal and power in an increasingly connected world.

Why ITT

ITT is a focused multi-industrial company that designs and manufactures highly engineered critical components and customized technology solutions. ITT's Cannon brand is a leading global manufacturer of connector products serving international customers in aerospace, defense, medical, industrial and transportation end markets. ITT's Connector business, which also includes the Veam and BIW Connector Systems brand, manufactures and supplies a variety of connectors and interconnects that make it possible to transfer data, signal and power in an increasingly connected world.

Connect with your ITT Cannon representative today or visit ittcannon.com

NORTH AMERICA

USA - Irvine, CA
+1.800.854.3028

MEXICO - Nogales
+52.631.3110050

EUROPE

GERMANY - Weinstadt
+49.7151.699.0

UK - Basingstoke
+44.1256.347400

ITALY - Lainate
+39.02938721

FRANCE
+33.1.60.04.93.93

ASIA PACIFIC

SINGAPORE
+65 66974205

JAPAN - Kanagawa
+81.462.57.2010

KOREA
+82.2.702.7111

CHINA - Shenzhen City
+86.755.2726.7888

HONG KONG
+852.2732.2720