cannon

# MKJ Series Connectors

71% weight and 52% size reduction
in an industry leading quick disconnect

Features & Benefits



ITT

ENGINEERED FOR LIFE

# Cannon MKJ Series: Reduction in weight and size without loss of reliability

## The MKJ family of mini-circular connectors provides similar electrical and mechanical characteristics as larger and heavier Military Standard Environmental connectors.

ITT Cannon continues its tradition of innovation with the MKJ line of miniature circular connectors. MKJ products tackle your matrix of harsh environment applications. These connectors offer three coupling methods (threaded, bayonet and breakaway) in a highly engineered design with reduced weight by 71% and size by 52% without sacrificing the environmental performance or reliability.*

Bringing together a unique combination of design, functionality and flexibility, the MKJ excels in delivering a product for a broad variety of harsh environment applications. The MKJ series comes with rear accessory threads or integral band platform for direct attachment of cable shield and overmold. MKJ provides unparalleled functionality for numerous applications across multiple markets including Industrial, Defense and Aerospace.

### Why customers benefit from choosing ITT Cannon's MKJ connectors:

- Available in rear-release crimp, PC tail or soldercup contacts
- Shells and jam nuts available in aluminum alloy or corrosion resistant stainless steel (AMS-QQ-S 763)
- Up to 2000 mating cycles

### Technical Overview

*For size 23 contact*

- Max Vibration 200 m/s² (20 g's) rms
- ∅ #22 - #28 AWG wire
- Max. current 5 Amps / max. voltage 500 VAC
- -55°C to +150°C / -67°F to +300°F

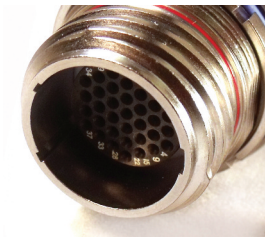
RoHS COMPLIANT PART NUMBERS

### Our products do what we say they will do



#### Contact Availability

Offered in crimp, PC tail and soldercup contact designs with proven reliability in harsh environment conditions. Contacts meet stanard MIL-C-39029.



#### MKJ 1 and 5 Robust Coupling Mechanism

MKJ's internal ratchet mechanism system meets the robust MIL-DTL-38999 shock and vibration requirement and is well suited for harsh environment applications.



#### Multiple Keying Positions

Master Key and 2 secondary keys. Multiple clocking positions available.



#### Integral Band Platform

Intergral band platform allows direct attachment of cable shield to connector.



#### Tooling & Accessory Options

Dust cap and backshells maintain the rear environmental sealing, crimp, contact insertion/ extraction and banding tools are also available.



#### High Density Connector

Connector uses size 23 contacts accepting #22 to #28 wire. Contacts spacing is reduced to 0.076 inches providing a compact yet robust package.

**When compared to the 38999 layouts with size 22 contacts.*

# Delivering durable, reliable and lightweight products for military & commercial aviation





**Teflon nickel, black zinc nickel** and **olive drab cadmium** plating maintain robust reliability for 500 hours of salt spray.



A variety of the series offer ruggedized computers and hand held communications equipment a **2,000 mating cycle**.



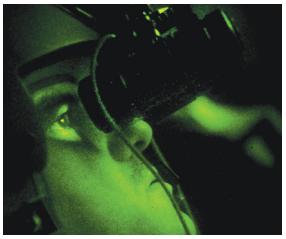
MKJ's **multiple coupling mechanisms** equip connectivity for navigation and telemetry applications.



Plugs and receptacles are **environmentally sealed** to meet the harsh environments

## Applications

- Sensors
- Satellites
- Instrumentation
- Missile systems
- Avionic systems
- Soldier technology
- Industrial equipment
- UAVs / unmanned systems
- Navigation & telemetry equipment
- Medical test & diagnostic equipment
- Ruggedized computers & hand-held communication equipment
- Commercial & military aircraft electronics













## Coupling Styles

The wide range of coupling options available for the MKJ Series allows compatible connectors to meet your demands even in the harshest environments.



| Coupling | MKJ0 UN Thread | MKJ 1 Double Start | MKJ 3 Bayonet | MKJ 4 Breakaway | MKJ 5 Triple Start |
|---|---|---|---|---|---|
| Markets & Segments | Defense, Aerospace, Medical, Industrial, Commercial | | | | |
| Hardware | Aluminum/ Stainless Steel | Aluminum/ Stainless Steel | Aluminum/ Stainless Steel | Aluminum/ Stainless Steel | Aluminum/ Stainless Steel |
| EMI Shielding Effectiveness | 40db attentuation, 100Mhz to 1000Mhz | | | | |
| Mating Cycles | 2000 | 2000 | 250 Aluminum 2000 Stainless Steel | 2000 | 500 |
| RoHS Compliant | Available | | | | |
| Materials | Shells - Aluminum Alloy or Stainless Steel<br>Insultators - Thermoplastic<br>Seals - Fluorosilicone<br>Contacts - Copper Alloy with gold over nickel plating | | | | |

Product Performance

| MKJ Series Performance | | | | |
|---|---|---|---|---|
| Contact Size | #23 | #20 | #16 | #12 |
| Spacing | .076” | .106” | .170” | .230” |
| Contact Type | Rear Crimp, Solder Cup, PCB Mount | | | |
| Current Rating | 5 Amps | 7.5 Amps | 13 Amps | 23 Amps |
| Wire Accommodation | #22 - 28 AWG | #20 - 24 AWG | #16 - #20 AWG | #12 - #14 AWG |
| DWV Voltage (VAC) | 750 VAC | 1000 VAC | 1800 VAC | 1800 VAC |
| Insultation Resistance | 5000 Megohms RMS Sea | | | |
| Operating Temperature | -55°C to +150°C | | | |
| Contact Resistance | 8 Milliohms | | | |
| Shock/Vibration | 300g / 37g | | | |
| Clocking Position | Master Key and 2 Secondary Keys. 6 Clocking Positions | | | |
| Housing Materials | Aluminum and Stainless Steel | | | |
| Receptacle Mounting | Jam Nut, Square Flange, In-Line | | | |

# How to Order Guide

## Configurator

| MKJ1 | A | 7 | F | 9-19 | P | A | ** |
|---|---|---|---|---|---|---|---|
| Series | Class | Shell Style | Material/ Plating | Shell Size Contact Arrangement | Contact Style | Shell Clocking | Modifications |

## SERIES

MKJ0 - Threaded Coupling, UN Thread
MKJ1 - Threaded Coupling, Double Start ACME Thread
MKJ3 - Bayonet Coupling
MKJ4 - Breakaway/Quick Disconnect
MKJ5 - Threaded Coupling, Triple Start ACME Thread

## CLASS

A - Environmental Plug & Receptacle with Banding/Overmolding Attachment
B - Environmental Plug & Receptacle with Threaded Accessory Attachment
C - Back-Potted Plug/Receptacle - PC/Flex/Solder
D - C Filtered Receptacle - Fixed Contacts
E - L Filtered Receptacle - Fixed Contacts
F - Pi Filtered Receptacle - Fixed Contacts
G - Space
H - Hermetically Sealed Receptacle - Fixed Contacts

## SHELL STYLE

1 - In-Line Receptacle
2 - Box Mount Receptacle (Square Flange)
3 - Receptacle, Round, Solder Mount
4 - Box Mount Plug (Flange)
6 - Straight Plug
7 - Jam Nut Receptacle - Rear Panel Mount
8 - Jam Nut Receptacle - Front Panel Mount (MKJ4 series only)
9 - Jam Nut Plug - Rear Panel Mount (MKJ4 series only)
10 - Jam Nut Plug - Front Panel Mount (MKJ4 series only)
16 - Straight Plug with Self-Locking Coupling Nut (MKJ0 series only)
26 - Straight Plug with Self-Ratchet Coupling Nut (MKJ1 series only)

## MATERIAL/PLATING

C - Aluminum/Anodize, Black
F - Aluminum/Electroless Nickel
K - Stainless Steel/Passivated
T - Aluminum/Teflon Nickel
W - Aluminum/OD Cad
Y - Stainless Steel/Electroless Nickel, Black
Z - Aluminum/Zinc Nickel, Black
N - Stainless Steel/Electroless Nickel

## SHELL SIZE & CONTACT ARRANGEMENT

| | | | |
|---|---|---|---|
| 5-3 | 3 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 6-1 | 1 Size 16 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 6-4 | 4 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 6-6 | 6 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 6-7 | 7 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 6-23 | 3 Size 20 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 7-1 | 1 Size 12 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 7-10 | 10 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 7-25 | 5 Size 20 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 8-1 | 1 Size 16 Contacts | Series MKJ5 |
| 8-2 | 2 Size 16 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 8-4 | 4 Size 23 Contacts | Series MKJ5 |
| 8-6 | 6 Size 23 Contacts | Series MKJ5 |
| 8-7 | 7 Size 23 Contacts | Series MKJ5 |
| 8-13 | 13 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 8-23 | 3 Size 20 Contacts | Series MKJ5 |
| 8-28 | 8 Size 20 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 9-1 | 1 Size 12 Contacts | Series MKJ5 |
| 9-4 | 4 Size 16 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 9-10 | 10 Size 23 Contacts | Series MKJ5 |
| 9-19 | 19 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 9-25 | 5 Size 20 Contacts | Series MKJ5 |
| 9-210 | 10 Size 20 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 10-2 | 2 Size 16 Contacts | Series MKJ5 |
| 10-2 | 2 Size 12 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 10-5 | 5 Size 16 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 10-13 | 13 Size 23 Contacts | Series MKJ5 |
| 10-26 | 26 Size 23 Contacts | Series MKJ0, MKJ1, MKJ3, MKJ4 |
| 10-28 | 8 Size 20 Contacts | Series MKJ5 |
| 11-4 | 4 Size 16 Contacts | Series MKJ5 |
| 11-19 | 19 Size 23 Contacts | Series MKJ5 |
| 11-210 | 10 Size 20 Contacts | Series MKJ5 |
| 12-2 | 2 Size 12 Contacts | Series MKJ0, MKJ3, MKJ4, MKJ5 |
| 12-3 | 3 Size 12 Contacts | Series MKJ0, MKJ3, MKJ4 |
| 12-5 | 5 Size 16 Contacts | Series MKJ5 |
| 12-7 | 7 Size 16 Contacts | Series MKJ0, MKJ3, MKJ4 |
| 12-26 | 26 Size 23 Contacts | Series MKJ5 |
| 12-37 | 37 Size 23 Contacts | Series MKJ0, MKJ3, MKJ4 |
| 12-220 | 20 Size 20 Contacts | Series MKJ0, MKJ3, MKJ4 |
| 13-2 | 2 Size 12 Contacts | Series MKJ1 |
| 13-3 | 3 Size 12 Contacts | Series MKJ1 |
| 13-7 | 7 Size 16 Contacts | Series MKJ1 |
| 13-37 | 37 Size 23 Contacts | Series MKJ1 |
| 13-220 | 20 Size 20 Contacts | Series MKJ1 |
| 14-5 | 5 Size 12 Contacts | Series MKJ3, MKJ4 |
| 14-12 | 12 Size 16 Contacts | Series MKJ3, MKJ4 |
| 14-55 | 55 Size 23 Contacts | Series MKJ3, MKJ4 |
| 14-235 | 35 Size 20 Contacts | Series MKJ3, MKJ4 |
| 15-2 | 2 Size 12 Contacts | Series MKJ5 |
| 15-3 | 3 Size 12 Contacts | Series MKJ5 |
| 15-7 | 7 Size 16 Contacts | Series MKJ5 |
| 15-37 | 37 Size 23 Contacts | Series MKJ5 |
| 15-55 | 55 Size 23 Contacts | Series MKJ0, MKJ3, MKJ4 |
| 15-220 | 20 Size 20 Contacts | Series MKJ5 |
| 15-241 | 41 Size 20 Contacts | Series MKJ3, MKJ4 |
| 16-5 | 5 Size 12 Contacts | Series MKJ1 |
| 16-12 | 12 Size 16 Contacts | Series MKJ1 |
| 16-55 | 55 Size 23 Contacts | Series MKJ1 |
| 16-235 | 35 Size 20 Contacts | Series MKJ1 |
| 17-7 | 7 Size 12 Contacts | Series MKJ1 |
| 17-14 | 14 Size 16 Contacts | Series MKJ1 |
| 17-85 | 85 Size 23 Contacts | Series MKJ1 |
| 17-241 | 41 Size 20 Contacts | Series MKJ1 |
| 18-5 | 5 Size 12 Contacts | Series MKJ5 |
| 18-12 | 12 Size 16 Contacts | Series MKJ5 |
| 18-55 | 55 Size 23 Contacts | Series MKJ5 |
| 18-235 | 35 Size 20 Contacts | Series MKJ5 |
| 19-7 | 7 Size 12 Contacts | Series MKJ5 |
| 19-14 | 14 Size 16 Contacts | Series MKJ5 |
| 19-85 | 85 Size 23 Contacts | Series MKJ5 |
| 19-241 | 41 Size 20 Contacts | Series MKJ5 |

## CONTACT STYLE

P - Pin, Crimp, Removale (For Class A & B only)
S - Socket, Crimp, Removable (For Class A & B only)
A - Pin, PC Tail, .062 Extension (For Class C through G only)
B - Pin, PC Tail, .109 Extension (For Class C through G only)
C - Socket, PC Tail, .062 Extension (For Class C through G only)
D - Socket, PC Tail, .109 Extension (For Class C through G only)
E - Pin, Solder Cup (For Class C through G only)
F - Socket, Solder Cup (For Class C through G only)

## SHELL CLOCKING (POSITION)

| | | |
|---|---|---|
| **MKJ0 Series** | N - Normal | |
| | X - Clocking Position X | |
| | Y - Clocking Position Y | |
| | Z - Clocking Position Z | |
| **MKJ1 Series** | A - Normal | 150° - 210° |
| | B - Clocking Position B | 75° - 210° |
| | C - Clocking Position C | 95° - 230° |
| | D - Clocking Position D | 140° - 275° |
| | E - Clocking Position E | 75° - 275° |
| | F - Clocking Position F | 95° - 210° |
| **MKJ3 Series** | N - Normal | 150° - 210° |
| | X - Clocking Position X | 75° - 210° |
| | Y - Clocking Position Y | 95° - 230° |
| | Z - Clocking Position Z | 140° - 275° |

| | | |
|---|---|---|
| **MKJ4 Series** | *Omit for Single Key/Keyway* | |
| | A - Normal | 150° - 210° |
| | B - Clocking Position B | 75° - 210° |
| | C - Clocking Position C | 95° - 230° |
| | D - Clocking Position D | 140° - 275° |
| | E - Clocking Position E | 75° - 275° |
| | F - Clocking Position F | 95° - 210° |
| **MKJ5 Series** | A - Normal | 150° - 210° |
| | B - Clocking Position B | 75° - 210° |
| | C - Clocking Position C | 95° - 230° |
| | D - Clocking Position D | 140° - 275° |
| | E - Clocking Position E | 75° - 275° |
| | F - Clocking Position F | 95° - 210° |

## MODIFICATION CODE

F0 - Less Contacts ("F0" not stamped on the connector, but must be included on the P.O.)

Capacitance Codes (pF)

A - 19,000 - 28,000
B - 16,000 - 22,500
C - 9,000 - 16,500
D - 4,000 - 6,000
E - 1,650 - 2,500
F - 400 - 650
G - 200 - 300

518 - Class "C" PC style back potted receptacle connectors with water immersion testing.

Consult factory for other modification codes

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

# Connect with the experts.

No one is more qualified to help you equip soldiers than ITT Cannon. With 100 years of interconnect excellence and seven decades of global presence in the Defense Industry, we are a committed partner among today's military equipment manufacturers. We continue to lead the market and meet soldiers' needs for adaptability, mobility and survivability. And we do so with one goal in mind: to get more soldiers home safely.

ITT


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