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# PL Series

## Plastic Push Pull Interconnects

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# We Connect

## When it matters most

For more than a century, ITT Cannon has developed innovative interconnect solutions for the world's most critical applications. With facilities in the United States, Germany, Italy, Mexico, China and Japan, each with its unique strengths, we offer our customers interconnect solutions that are truly Engineered for Life.

In addition to this truly global footprint, we offer highly specialized, segmented industry expertise. We have a proven track record as an industry leader in medical and industrial applications. This has equipped us with the knowledge needed to continue to produce the most advanced, resilient and reliable connectors for our customers' most challenging conditions.

## Connecting the world's most important information with those who need it.

Drawing upon nearly 50 years of global presence in the medical industry, ITT Cannon represents a committed partner to medical equipment manufacturers, bringing connector solutions to the applications that help change lives every day.

### The ITT Cannon difference

- Global capabilities & local support
- Proven application expertise
- A century of interconnect leadership
- 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. Founded in 1920, ITT is headquartered in White Plains, N.Y., with employees in more than 35 countries and sales in a total of approximately 125 countries. For more information, visit www.itt.com.

# ITT Cannon Push Pull PL Series

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The ITT Cannon PL Series of plastic push pull interconnects is a high quality, versatile and cost effective solution for challenging medical and industrial applications where miniaturized, lightweight and durable connectors are critical to operating performance.

ITT Cannon's PL Series is a 'Plastic Latching' push pull connector that delivers the ultimate in performance when it matters most. Available in 2 to 14 way variants, with durability in excess of 2,000 mating cycles and with 6 keying options and 7 color codings the PL Series is an extremely versatile solution for a wide variety of both disposable and reusable applications.

Cannon's integrated cable assembly solutions combined with intermateability with existing push pull industry solutions ensures the PL Series is the ultimate choice for today's critical applications.

## Key features

- Innovative self-latching mechanism enables quick and simple mating & un-mating
- Medical grade quality – lightweight and ruggedized
- 6 keying and 7 color coding options enables wide customization
- Available in 2 to 14 way variants
- Accommodates cable sizes ø 2.7 to 6.5 mm
- Fully sterilizable – by gas or steam
- Value added cable assembly solutions available
- Intermateable with existing industry solutions

## Applications

- Medical
  - Electrosurgery tools
  - ECG devices
  - Catheters
  - Sensors
  - Respirators
  - Defibrillators
  - Dental tools
- Industrial electronics
- Test and measurement



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# PL Series product overview

## PL Series performance data

| | |
|---|---|
| **Operating temperature range** | PSU: -50 to 150° C (Standard offering)<br>PEI: -50 to 170° C (Contact ITT Cannon) |
| **Current rating** | 2 to 10A |
| **Insulation resistance** | $10^{12}$ Ω |
| **Voltage** | 0.6 to 1.2 kV rws |

| | |
|---|---|
| **Ingress protection** | IP50 |
| **Durability** | In excess of 2,000 cycles |
| **Sterilization capability** | Can be sterilized by gas or steam |
| **Certifications** | UL Certified<br>RoHS compliant |

## PL Series Push Pull latching system.

**1.** The push-pull locking system is widely used for quick and easy mating and un-mating.

**2.** To mate the connectors simply push the plug into the socket.

**3.** Once the connectors are mated, they cannot be un-mated by pulling on parts other than the release sleeve of the outer shell.

**4.** To un-mate the connectors, simply pull the release sleeve of the outer shell.

## Exploded view of PL Series

| | | | | | |
|---|---|---|---|---|---|
| Straight plug | | | | | |
| | Backnut | Cable Collet | Insulator & Contacts | Shell | |
| Straight plug with bend relief | | | | | |
| | Bend Relief | Bend Relief for a Backnut | Cable Collet | Insulator & Contacts | Shell |
| Receptacle with back panel mounting | | | | | |
| | Hexagonal Nut | Shell | Front Nut | | |
| In-line receptacle | | | | | |
| | Backnut | Cable Collet | Insulator & Contacts | Shell | |
| In-line receptacle with bend relief | | | | | |
| | Bend Relief | Bend Relief for a Backnut | Cable Collet | Insulator & Contacts | Shell |

# PL Series part number system

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## Straight plug and inline receptacle

| PL | XX | X | X | X | X | X | XX |
|---|---|---|---|---|---|---|---|

Push pull plastic

Straight plug
In-line receptacle
A1= straight plug with cable collet ---- solder contact
A3= straight plug with cable collet and nut for fitting a bend relief ---- solder contact
C1= In-line receptacle with cable collet ---- solder contact
C3= In-line receptacle with cable collet and nut for fitting a bend relief ---- solder contact

Outer shell material:
G= Grey PSU(standard) F= Black PEI
B= Black PSU P=Grey PEI

Back nut color:
0= Black 1= White 2= Red 4= Yellow 5= Green 6= Blue 8= Grey

For A3 and C3 the Back nut is only available in Grey (8)

Number of contacts:
02= 2Pin 03= 3Pin 04= 4Pin
05= 5Pin 06= 6Pin 07= 7Pin
08= 8Pin 09= 9Pin 10= 10Pin
14= 14Pin

Coding:
0= 0° (standard)
A= 40° C=60°
E= 80° H= 170° J=205°

Cable collet:
1=ø3.9mm (cable ø=2.7~3.9mm)
2=ø5.2mm (cable ø=4.0~5.2mm)
3=ø6.5mm (cable ø=5.3~6.5mm)

Contact plating:
2= Gold plating 20u''

For A3 and C3 type, please order bend relief separately.

## Receptacle

| PL | XX | X | X | X | X | X | XX |
|---|---|---|---|---|---|---|---|

Push pull plastic

Receptacle
B1= Receptacle with two nuts
(back panel mounting) ----solder contact
B3= Receptacle with two nuts,
(back panel mounting) ----with 90 degree
PCB contact
B4= Receptacle, front nut fixing ----solder contact

Outer shell material:
G= Grey PSU(standard) F= Black PEI
B= Black PSU P=Grey PEI

Front nut color:
0= Black 1= White 2= Red 4= Yellow
5= Green 6= Blue 8= Grey

Number of contacts:
02= 2Pin 03= 3Pin 04= 4Pin
05= 5Pin 06= 6Pin 07= 7Pin
08= 8Pin 09= 9Pin 10= 10Pin
14= 14Pin

Coding:
0= 0° (standard)
A= 40° C=60°
E= 80° H= 170° J=205

Cable collet:
0= no cable collet

Contact plating:
2= Gold plating 20u''

## Bend relief

| PL | BR | X | XXX0 |
|---|---|---|---|

Push pull plastic

Bend relief

Color:
0= Black 2= Red 3= White 4= Yellow 5= Green 6= Blue 8= Grey

| Cable n (mm) | | |
|---|---|---|
| | Min | Max |
| 025 | >2.5 | 3 |
| 030 | >3.0 | 3.5 |
| 035 | >3.5 | 4 |
| 040 | >4.0 | 4.5 |
| 045 | >4.5 | 5 |
| 050 | >5.0 | 5.5 |
| 055 | >5.5 | 6 |
| 060 | >6.0 | 6.5 |

Dimensions shown in mm



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# PL Series straight plug and receptacles

## Straight Plug

## Receptacle

## A1 Straight plug with cable collet

## A3 Straight plug with cable collet and nut for bend relief

## B1 Receptacle with two nuts

| Number of Contacts | Dimensions | |
|---|---|---|
| | A | B |
| 02 | 2.5 | - |
| 03 | | - |
| 04 | | - |
| 05 | | - |
| 06 | | - |
| 07 | | 3.9 |
| 08 | | 3.9 |
| 09 | | 3.9 |
| 10 | | 3.9 |
| 14 | | 3.9 |

Solder to board and crimp contacts are available. Contact ITT Cannon for details.

Dimensions shown in mm

# PL Series receptacles

## B3 Receptacle with 90˚contacts

| Number of Contacts | Dimensions | |
|---|---|---|
| | A | B |
| 02 | 2.5 | - |
| 03 | | - |
| 04 | | - |
| 05 | | - |
| 06 | | - |
| 07 | | 3.9 |
| 08 | | 3.9 |
| 09 | | 3.9 |
| 10 | | 3.9 |
| 14 | | 3.9 |

Solder to board and crimp contacts are available. Contact ITT Cannon for details.

## B4 Receptacle with nut fixing

## C1 In-line receptacle with with cable collet

## C3 In-line receptacle for bend relief

Dimensions shown in mm



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# PL Series bend relief and housing models

## Bend Relief

Material: silicone
Temperature range :-50~200°C

| Part Number | Cable Ø (mm) | |
|---|---|---|
| | Min. | Max. |
| 025 | >2.5 | 3.0 |
| 030 | >3.0 | 3.5 |
| 035 | >3.5 | 4.0 |
| 040 | >4.0 | 4.5 |
| 045 | >4.5 | 5.0 |
| 050 | >5.0 | 5.5 |
| 055 | >5.5 | 6.0 |
| 060 | >6.0 | 6.5 |

| Colour Code | 0 | 2 | 3 | 4 | 5 | 6 | 8 |
|---|---|---|---|---|---|---|---|
| Colour | Black | Red | White | Yellow | Green | Blue | Grey |

# Housing Models

### STRAIGHT PLUGS

A1

A3

FLUIDIC PLUG

### RECEPTACLE

B1

B3

B4

BE

BF

FLUIDIC RECEPTACLE

### IN-LINE RECEPTACLE

C1

C3

For fluidic, BE and BF options please contact ITT Cannon.

Dimensions shown in mm

# PL Series product options

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## Insert Configurations

| Number of contacts | | 02 | 03 | 04 | 05 | 06 | 07 | 08 | 09 | 10 | 14 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| View from termination side | Male | | | | | | | | | | |
| | Female | | | | | | | | | | |
| Test voltage (kv rms) | | 1.2 | 1.2 | 1.2 | 1.05 | 1.05 | 1.05 | 1.05 | 0.85 | 0.85 | 0.6 |
| Rated current | | 10 | 10 | 8 | 7 | 6 | 5 | 5 | 3 | 3 | 2 |
| Creepage and clearance (mm) distance | | 1.3 | 1.3 | 1.2 | 0.8 | 0.85 | 0.85 | 0.6 | 0.65 | 0.5 | 0.5 |
| Max, AWG | | 20 | 20 | 22 | 22 | 26 | 26 | 26 | 28 | 28 | 28 |
| Solder bucket Ø(mm) | | 1.1 | 1.1 | 0.85 | 0.85 | 0.65 | 0.65 | 0.65 | 0.45 | 0.45 | 0.45 |
| Contact Ø(mm) | | 1.3 | 1.3 | 0.9 | 0.9 | 0.7 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 |

## Alignment Key

| Part Number | | | | | | |
|---|---|---|---|---|---|---|
| CODING | 0 | A | C | E | H | J |
| PLUG FRONT VIEW | | | | | | |

## Color Coding

| Part Number | | | | | | |
|---|---|---|---|---|---|---|
| Front and back nut colors | | | | | | |
| 0=Black | 1=White | 2=Red | 4=Yellow | 5=Green | 6=Blue | 8=Grey |

## Outer Shell Material

| Part Number | | |
|---|---|---|
| Material | PSU | PEI |
| Temperature | -50° / +150°C | -50° / +170°C |
| Part number | G=Grey PSU | F=Black PEI |
| | B=Black PSU | P=Grey PEI |

## Gold Plating

| Part Number |
|---|
| 2=Gold plated 20u” |

## Contact Diameter

| Part Number |
|---|
| 1=Ø1.3mm (only for 2; 3 pin) |
| 2=Ø0.9mm (only for 4; 5 pin) |
| 3=Ø0.7mm (only for 6; 7; 8 pin) |
| 4=Ø0.5mm (only for 9; 10; 14pin) |

## Cable Collet

| Part Number |
|---|
| 1=Ø3.9mm (Cable Ø=2.7~3.9mm) |
| 2=Ø5.2mm (Cable Ø=4.0~5.2mm) |
| 3=Ø6.5mm (Cable Ø=5.3~6.5mm) |
| 0=No cable collet (B type only) |

Dimensions shown in mm

# PL Series PCB drilling detail

## For 90° Elbow contacts,see from A-A view.

## For straight contacts

## Panel Cutout

Dimensions shown in mm

# Additional advanced, resilient and reliable solutions from ITT Cannon

## DL

The DL Series of Zero Insertion Force (ZIF) connectors are high performance, multiple-wire power and signal connectors with a minimum rated life of 10,000 mating cycles.

## QLC

The miniaturized QLC series is a durable, highly reliable and easily assembled high pin count connector solution for today's portable medical and industrial applications.

## DLP

The DLP series of connectors provide extremely reliable performance with minimized signal paths and crosstalk as the innovative design ensures receptacle contacts mate directly to the PCB.

## Universal Contact

The UC series has a singular contact design which exhibits over 0.3N of force with only 0.1mm of deflection and provides the ultimate dry circuit pressure contact for commercial and handheld applications.

## APD

APD is a full-plastic, proven bayonet series with IP69K sealing and color and mechanical coding that is an ideal solution for critical environments that require high sealing grades.

## Customized Cable Assemblies

ITT Cannon has value added cable assembly capabilities at its global engineering centers and the proven expertise to partner with customers to develop specialized assemblies for any application.



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

# Connect with the experts

ITT Cannon is a world leader in the design and manufacture of highly engineered solutions for multiple end markets.

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