

cannon

CTC Series

Environmentally sealed
cable-to-cable interconnects



ITT

We Connect

When it matters most

For more than a century, ITT Cannon has developed innovative interconnect solutions for the world's harshest environments. 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 harsh-environment applications. This has equipped us with the knowledge needed to continue to produce the most resilient, reliable connectors for our customers' most challenging conditions.

Global interconnect solutions for the harshest environments.

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 Stamford, Connecticut, with employees in more than 35 countries and sales in a total of approximately 125 countries. For more information, visit itt.com.



The ITT Cannon CTC Series is a high-performance, cost-effective cable to cable solution for use in harsh environment applications where reliable signal circuits are critical to operating performance.



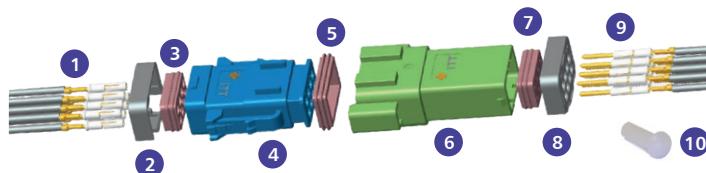
ITT Cannon's CTC is an extremely simple to install and maintain connector series that requires no special contact insertion tools or the use of wedge locks or blind seals in order to deliver a sealing rating up to IP69K.

Utilizing ITT Cannon's proven Trident T2P and T3P contact technology, and available in 8-way to 24-way layouts, the CTC Series provides a highly engineered and cost effective harsh environment interconnect solution.

Suitable for a wide variety of applications including heavy equipment, agriculture, truck and bus, automotive and commercial/industrial outdoor electronics, CTC delivers the ultimate in performance – when it matters most.

Key Features

- Simple to install and maintain
- Hand insertable contacts (no special tools required)
- No wedge locks or blind seals required
- From 8-way to 24-way layouts
- Up to IP69K sealing with positive locking latch
- Utilizes Trident stamped and machined contacts
- Silicone rubber interface gasket to withstand extreme condition of temperature and moisture
- Accommodates wire range: 24-16 AWG (0.20 to 1.50 mm²)
- Polarization key for blind-mating and prevent misalignment



1. Plug contacts
2. End cap
3. Rear wire seal
4. Plug housing
5. Interface gasket
6. Receptacle housing
7. Rear wire seal
8. End cap
9. Receptacle contacts
10. Optional sealing plug

Example CTC Application Areas

- Engine harnesses
- Lighting Systems
- Controllers
- Signal Interfaces
- Cabin accessories
- Sensors
- Seat and window controls
- Wipers/Under hood electronics
- LCD displays & accessories

CTC Series performance and test specification

The connector design incorporates an integral rubber sealing system that ensures excellent waterproof performance. The 8, 12, 16 and 24-way variants with end caps are sealed to IP69K. Connector housings are manufactured with thermoplastic UV resistant material that is not only robust, but has excellent dielectric/mechanical properties and is RoHS compliant.

The sealing system is comprised of a front and rear rubber, multi-sealing and a perimeter against environmental ingress.

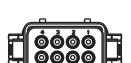
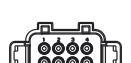
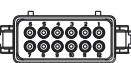
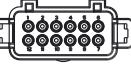
The durable end gasket contains membrane wire seals that do not require a sealing plug. The reliable Trident contacts are formed or machined from brass and stainless steel to ensure a highly reliable electrical connection.

Contact current rating	Up to 13A, up to 16A with high conductivity contacts
Operation voltage	Up to 250V ac rms *
Wire range	Contacts will accept wire ranges of 24-16 AWG (0.20 to 1.50 mm ²)
Operating temperature	-55°C to +105°C (-67°F to +221°F)
Durability	200 cycles (T2P) and up to 500 cycles (T3P)
Single contact retention force	> 67N
Single contact inserting force	< 50N
Connector mating & withdrawal force	8, 12-way: <130N; 16, 24-way: <180N
Latch retention force	8, 12-way: >125N; 16, 24-way: >150N
Environmental sealing	Up to IP69K with end caps
Flammability	UL 94 V-0
Dielectric voltage	1550V ac for 60 seconds
Thermal shock	-55°C to +125°C (-67°F to +257°F), 5 cycles
Physical shock	50g's peak, 3 axes, 11millisecond duration half-sine pulse, no loss of continuity >1μsec
Fluid resistance	Connectors show no damage when exposed to most fluids used in industrial applications
Vibration	10g's peak, 10-500 Hz, 9 hours, no loss of continuity >1μsec
Salt spray	48 hours
Temperature endurance	1000 hours at 125°C (+257°F); Insulation resistance > 100MΩ
Humidity	Steady state RH 90-95%, 40°C (+104°F), 504 hours; Insulation resistance > 100MΩ
Submersion	In mated condition, properly wired, placed in a depth of water of 1 meter for 30 minutes without loss of electrical performance
Test report	Available upon request
Moisture resistance	10 Cycles; Insulation resistance > 100MΩ
Product Material	
Housing / End cap	Thermoplastic
Seal gasket	Silicone rubber
Interface gasket	Silicone rubber
Contacts	Brass or copper alloy & stainless steel. Tin, gold, silver plated
Sealing plug	Thermoplastic

* Standard voltage is approximately 48V dc. No precaution necessary. Do not unmate under load. Take care that open pin side is not live.

CTC Series product layout and part number detail

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Part Number					
Black	Gray	Description	Wire O.D.	Picture	Layout
132015-0134	132015-0159	8-way plug	1.6mm to 1.8mm (2.0mm*)		
132015-0130	132015-0155	8-way receptacle	1.6mm to 1.8mm (2.0mm*)		
132015-0135	132015-0160	12-way plug	1.6mm to 1.8mm (2.0mm*)		
132015-0131	132015-0156	12-way receptacle	1.6mm to 1.8mm (2.0mm*)		

Part Number					
Black	Gray	Description	Wire O.D.	Picture	Layout
132015-0073	132015-0115	16-way plug	1.6mm to 1.8mm (2.7mm**)		
132015-0074	132015-0114	16-way receptacle	1.6mm to 1.8mm (2.7mm**)		
132015-0075	132015-0113	24-way plug	1.6mm to 1.8mm (2.7mm**)		
132015-0076	132015-0112	24-way receptacle	1.6mm to 1.8mm (2.7mm**)		

Part Number					
White		Description		Picture	
192991-0018		Sealing plug			

Wire Size	Wire Range mm ²	Wire Outer Dia. mm (in)
24 AWG	0,20 - 0,25	Ø 1,60 (.062) minimum
22-20 AWG	0,32 - 0,50	Ø 1,60 (.062) – 1,80 (.071)
18-16 AWG	0,75 - 1,50	Ø 1,60 (.062) – 2,70 (.106)

ITT Cannon has the ability to manufacture these connectors in a wide range of colors. Please contact your local ITT sales representative for more details.

* 2.0mm O.D. wire can be used for 8 and 12-way layouts but only for 50% of contact cavities equally distributed.

** 2.70mm O.D. wire can be used for 16 & 24-way layouts but only for 50% of contact cavities equally distributed.

CTC Series contact information

CTC utilizes the highly engineered Trident T2P (stamped) and T3P (machined) contact to provide a simple, reliable and economic cable-to-cable connector solution.

Contact data rating

		T2P Two piece formed (stamped) contact For up to 200 mating cycles Full support tooling available		T3P Three piece machined contact For up to 500 mating cycles Full support tooling available	
Contact Type		Standard Crimp	High Conductivity Crimp	Machined Crimp	
					
Technical and Performance Data					
Support wire size		24 -16 AWG (0.20 to 1.50 mm ²)		24 -16 AWG (0.20 to 1.50 mm ²)	
Current rating		13A		16A	
Mechanical endurance		Up to 200 insertions		Up to 200 insertions	
Body material		Brass		Copper Alloy	
Retention spring material		Stainless Steel		Stainless Steel	
Plating Availability					
Tin		2µm (80µ in.)		2µm (80µ in.)	
Gold		0,1µm (gold flash) (4µ in.) 0,75µm (30µ in.)		0,1µm (gold flash) (4µ in.) 0,75µm (30µ in.)	
				0,4µm (pin) / 0,75µm (socket) 3µm (pin and socket)	

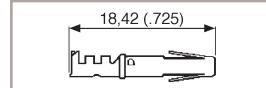
Contact factory for silver plating options.

Stamped contact information – Standard brass material

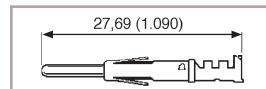
• 13 A current rating
• Three plating styles available
• Separate retention spring
• Up to 200 mating cycles
• Wide range of wire sizes
• Full support tooling available

► Size 16 to 24 AWG, Insulation Grip

► Socket



► Pin



			Part Number Pack (100)			Part Number Reeled (3000)				
Wire range mm ²	Wire Size	Contact	Tin Plating	Gold Flash	Gold plating	Tin Plating	Gold Flash	Gold plating	Insulation Diameter*	Strip Length
0,20 - 0,25	24 AWG	Pin	192990-0020	192990-0080	192900-0448	192990-2510	192990-2650	192900-0406	0,89 (.035) - 1,60 (.062)	3,95 (.155)±0,25(.009)
0,20 - 0,25	24 AWG	Socket	192990-0030	192990-0090	192900-0452	192990-2550	192990-2690	192900-0410	0,89 (.035) - 1,60 (.062)	3,95 (.155)±0,25(.009)
0,32 - 0,50	22-20 AWG	Pin	192990-0040	192922-1460	192900-0447	192990-2500	192990-2640	192900-0405	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25(.009)
0,32 - 0,50	22-20 AWG	Socket	192990-0050	192922-1470	192900-0451	192990-2540	192990-2680	192900-0409	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25(.009)
0,75 - 1,50	18-16 AWG	Pin	192990-0060	192990-0100	192900-0446	192990-2490	192990-2630	192900-0404	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25(.009)
0,75 - 1,50	18-16 AWG	Socket	192990-0070	192990-0110	192900-0450	192990-2530	192990-2670	192900-0408	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25(.009)

Contact factory for availability of other wire sizes.

* If environmental sealing is required to IP69K the insulation diameter must be between 1,60mm (.062) and 2,70mm (.106).

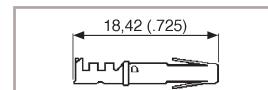
Dimensions are in mm unless stated otherwise.

Stamped contact information – High conductivity material

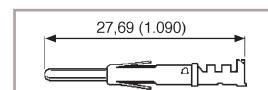
- 16 A current rating
- Recommended for elevated temperatures
- High conductivity copper alloy with tin plating
- For use with standard crimp tooling
- Up to 200 mating cycles

► Size 16 to 24 AWG, Insulation Grip

► Socket



► Pin



		Part Number Pack (100)		Part Number Reeled (3000)			
Wire Range mm ²	Wire Size	Contact	Tin Plating 2µm (80µ in.)	Tin Plating 2µm (80µ in.)	Insulation Diameter*	Strip Length	
0,20 - 0,25	24 AWG	Pin	192900-0122	192900-0120	0,89 (.035) - 1,60 (.062)	3,95 (.155)±0,25 (.009)	
0,20 - 0,25	24 AWG	Socket	192900-0123	192900-0121	0,89 (.035) - 1,60 (.062)	3,95 (.155)±0,25 (.009)	
0,32 - 0,50	22-20 AWG	Pin	192900-0126	192900-0124	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25 (.009)	
0,32 - 0,50	22-20 AWG	Socket	192900-0127	192900-0125	1,17 (.046) - 2,08 (.081)	3,95 (.155)±0,25 (.009)	
0,75 - 1,50	18-16 AWG	Pin	192900-0002	192900-0000	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25 (.009)	
0,75 - 1,50	18-16 AWG	Socket	192900-0003	192900-0001	2,00 (.078) - 2,70 (.106)	3,95 (.155)±0,25 (.009)	

Contact factory for availability of other wire sizes and platings.

* If environmental sealing is required to IP69K the insulation diameter must be between 1,60mm (.062) and 2,70mm (.106).

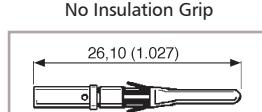
Machined contact information

- 13 A current rating
- Separate contact and retention spring
- Up to 500 mating cycles
- Variety of plating options
- Full support tooling available

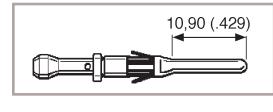
► Size 16 AWG, No Insulation Grip Size 20 to 24 AWG, Insulation Grip



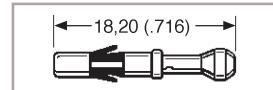
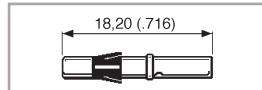
► Socket



Insulation Grip



► Pin



			Part Number Pack (100)					
Wire range mm ²	Wire Size	Contact	Gold Plating (X)	Gold Plating (Y)	Tin Plating	Insulation Diameter*	Strip Length	Color Band
0,20 - 0,24	24 AWG	Pin	192991-0093	192991-0092	192991-0094	1,05 (.041) - 1,60 (.062)	5,08 (.200)±0,25 (.009)	Blue
0,20 - 0,24	24 AWG	Socket	192991-0055	192991-0043	192991-0049	1,05 (.041) - 1,60 (.062)	5,08 (.200)±0,25 (.009)	Blue
0,25 - 0,50	22 AWG	Pin	192991-0097	192991-0096	192991-0098	1,60 (.062) - 2,15 (.084)	5,08 (.200)±0,25 (.009)	Red
0,25 - 0,50	22 AWG	Socket	192991-0056	192991-0044	192991-0050	1,60 (.062) - 2,15 (.084)	5,08 (.200)±0,25 (.009)	Red
0,44 - 0,64	20 AWG	Pin	192991-0089	192991-0088	192991-0090	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,44 - 0,64	20 AWG	Socket	192991-0058	192991-0046	192991-0052	1,60 (.062) - 2,10 (.082)	5,08 (.200)±0,25 (.009)	Green
0,60 - 1,51	16 AWG	Pin	192991-0085	192991-0084	192991-0086	1,60mm (.062) - 2,70mm (.106)	7,11 (.279)±0,25 (.009)	Black
0,60 - 1,51	16 AWG	Socket	192991-0059	192991-0047	192991-0053	1,60mm (.062) - 2,70mm (.106)	7,11 (.279)±0,25 (.009)	Black

* If environmental sealing is required to IP69K the insulation diameter must be between 1,60mm (.062) and 2,70mm (.106).

Contact factory for availability of other wire sizes.

X - Gold plating pin and socket: 3µm (120µ in.)

Y - Gold plating pin: 0.4µm (16µ in.), socket: 0.75µm (30µ in.)

Dimensions are in mm unless stated otherwise.

CTC Series mounting clips and backshells

Mounting clips

Mounting clips are used to mount CTC Series connectors. To meet varied customer requirements the clips are available in various configurations and in steel with zinc plating or stainless steel.



Straight mounting direction/stainless
- P/N 132015-0098

The outer diameter of the mounting screw hole is adjustable to customer requirements.



Side mounting direction/steel with
zinc plating - P/N 132015-0099

Backshells

We are currently developing a line of back shells and accessories for this connector family.

Please contact your local sales office for more information.



CTC Series application tooling information

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Hand Tools - For stamped contacts

Ratcheted Hand Tool - A range of single action, factory calibrated tools are available to support stamped contacts.



Signal Contact	Part Number
16-18 AWG	121586-5237
20-22, 24-26 AWG	121586-5236

Hand Tools - For machined contacts

This is a ratcheted, four indent crimp tool that is fully adjustable. They can crimp all sizes of machined contacts.



Description	Hand Tool P/N	Locator
Machined Crimp	995-0001-585	192990-7600 (Calibrated)

Extraction Tool

Contacts can readily be removed from the housings using an extraction tool. The tool is placed over the contact and the sleeve rotated slightly as it is pushed home to release the spring. Light pressure on the knob then ejects the contact from the rear of the housing.



Description	Part Number
For Pin & Socket Contacts	192922-1450

Wiring Assist Tool

These wiring needles are available as a wiring aid for high density layouts to ease insertion of individual contacts.



Description	Part Number
For Pin Contact	192900-0605
For Socket Contact	192900-0606

Mini Applicators - For stamped contacts

Mini Applicators are interchangeable modules that will fit into many standard crimping machines. They are available for all sizes of stamped signal contacts.

AWG Size	Part Number
16-18	121586-5217
20-26	121586-5239

Testing Gauge - For stamped contacts

The testing gauge will be helpful to check whether a crimp is ok or not. The contact should be inserted into the test fixture without scratching the test hole (diameter 3.3 mm).

Description	Part Number
Testing Gauge	317-8675-133

Pneumatic Table Crimp Tool - For machined contacts

This tool fully meets the requirements of specification MIL-C-22520. The tool produces eight-indent crimp terminations of excellent quality. Together with the bench mount BM-2 and the foot pedal WA-10 it becomes an installed tool facilitating the work. The Hands of the operator are free to insert the contact, the wire and to remove the terminated contact.

Nomenclature	Description	Part Number	AWG
WA27F-CE	Pneumatic Crimp Tool	121586-5067	12-20
WA22F-CE	Pneumatic Crimp Tool	121586-5070	20-32
BM-2	Bench Mount	121586-5068	
WA10	Foot Pedal	121586-5069	

CTC Series assembly and extraction instructions

Assembly Instruction

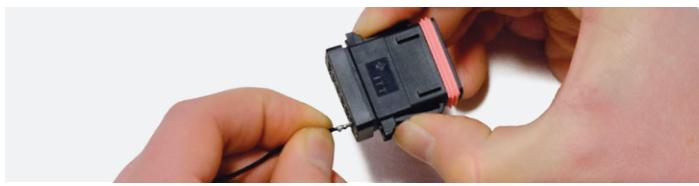
Step 1: Crimp wire with hand tool (or semi-automated crimping machine)



Step 2: Grasp the crimped contact just behind where the wire enters the contact. Take proper care to support both the contact and wire during insertion.



Step 3: Push the contact through the seal gasket into the insulator. Continue to push until the contact locks into place.



Step 3 (optional): A wiring assist tool is available to ease the insertion of contacts through the rear wire seal.



Step 4: Pull on the wire slightly to verify the contact is secure.



Assembly instructions shown apply for both plug and receptacle connectors.

Note: Rear wire seal is not reusable. To ensure IP sealing to product specification it is highly recommended to use a new grommet and insulator when re-inserting the extracted contact.

Step 5: Inspect the mating face of the connector, the contacts should extend the same distance into the connector.



Extraction Instruction

Step 1: Grasp the extraction tool on the knurled portion of the outer tube. Do not push on the plunger knob yet.



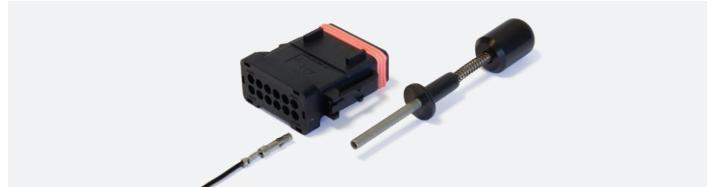
Step 2: Insert the tube into the contact cavity from the mating surface, push the tube fully into the cavity.



Step 3: Depress the plunger, this should only require light pressure to eject the contact. The contact now can be removed from the back of the connector.



Step 4: Inspect the contact, verify the tines are not damaged.



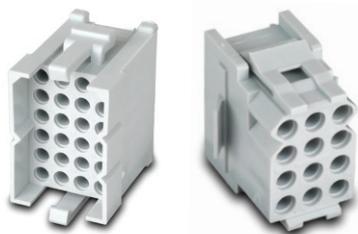
Additional rugged, reliable and proven connector solutions from ITT Cannon and Veam

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Trident Series*

This versatile range of metal and plastic electrical connectors with fully interchangeable contacts is available in rectangular and circular configurations, supporting the widest variety of harsh environment applications.



Trident Rectangular Series*

This range of plastic rectangular electrical connectors with fully interchangeable contacts is typically used for circuit board and internal wiring applications and is available in both standard and flame retardant materials.



APD Series**

This full-plastic, proven bayonet series with IP69K sealing and color and mechanical coding is an ideal solution for multiple harsh transportation and industrial environments that require high sealing grades.



VRPC Series*

This full plastic rectangular sealed connector series for multiple transport and industrial applications is extremely durable, small and light weight and meets stringent NFF fire and smoke resistance standards for Rail.

* Series shares the same contacts as the CTC Series

** APD 6/7-way layouts share the same contacts as the CTC Series

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

Connect with the experts

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



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.

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