



ITT

Interconnect Solutions
Cannon, VEAM, BIW

Cannon APD Series ISO 15170 Connectors



Engineered for life

Cannon, VEAM, BIW

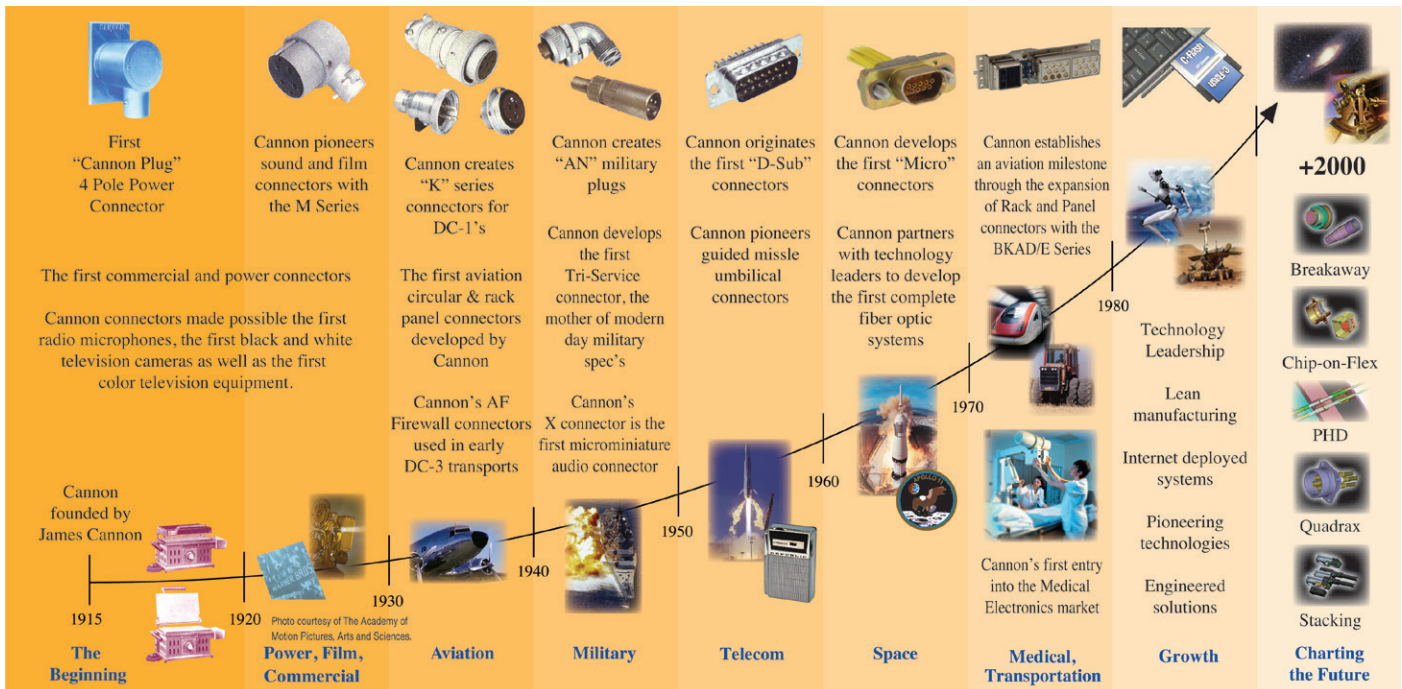
A Historical Achievement of Technology Leadership

Defining and Championing Innovation

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

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

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



ITT Interconnect Solutions

ITT Interconnect Solutions is a division of the multi-national ITT Corporation, a \$9 billion dollar global enterprise representing the brands Cannon, VEAM, and BIW. Our connector portfolio remains the most extensive in the industry offering the most reliable and cost effective range of interconnect solutions. These innovations have enabled ITT to provide products and technologies to such markets as:

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

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

Six Sigma Manufacturing

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

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

The Custom Difference

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

RoHS Compliance Information

ITT has implemented a strict parts control plan for all ITT electronics plants worldwide that allows the Cannon, VEAM, and BIW connector product portfolios to meet the requirements of European Union Directive 2002/95/EC better known as the Reduction of Hazardous Substances initiative. As appropriate, specific Cannon, VEAM, and BIW products may be ordered with an R prefix number which insures our customers will receive RoHS compliant parts for their commercial electronics applications and equipment. Since most RoHS hazardous substances center around specific metal plating and lead solder coatings, ITT's products for RoHS compliance are available in the following plating finishes: black zinc 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.



Interconnect Technologies & Solutions for the Transportation Industry

For over 90 years, ITT has been developing innovative solutions for harsh environment applications. We have a proven track record of demonstrating our expertise and commitment to the transportation industry, offering the broadest portfolio of interconnect products.

Off-Road / Heavy Vehicle

Our interconnect range include sealed circulars, plastic and metal shell bayonet coupling circulars, miniature metal shell circulars, PC board header connectors and sensor and direct device connectors. ITT is also a systems supplier, providing value-added module and harness assemblies.

***In addition to our APD ISO 15170 series,
we also offer these connectivity solutions:***



VEAM VBN

Completely intermateable with VEAM VG95234/CIR reverse bayonet connectors.



Cannon CA-Bayonet

Signal and power connectors with exceptional sealing against the ingress of fluids and will withstand the effects of high vibrations.

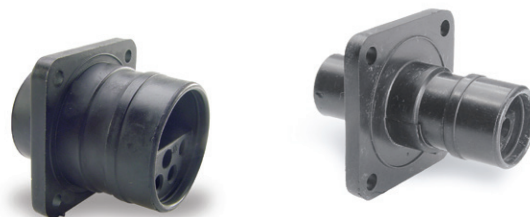


Cannon Trident

Versatile range of electrical connectors based on a standard contact design. Options include; industrial grade, harsh environment and shielded circulars.

Cannon Sure Seal

Sure Seal is a series of rugged, IP 67 proof connectors. The one piece molded body provides integrated sealing and excellent vibration resistance.



The ITT "Engineered Blocks" symbol and the composite ITT logo are registered trademarks of ITT Corporation. © 2011



APD is a versatile range of full plastic direct, in-line and bulkhead connectors. The products were originally designed for the transportation, off-road and special vehicle markets meeting all typical demands of applications in this field. In the meantime APD is also the connector of choice in other areas as e.g. military or industrial applications that require harsh environment solutions while needing a product that is both, small in size and light in weight.

The APD series covers a wide range of 1 and 2-way power solutions up to 51-way interface connectors, special sensor or PCB type versions and a flexible platform for your customized solutions.

Based on the original DIN72585 standard – now replaced by ISO 15170 – this connector is an ideal solution whenever harsh environment requirements like resistance to engine, transmission or brake fluids, high sealing grades up to IP69K or vibration requirements have to be met. Please be aware that all mentioned connectors are not designed to be disconnected under load.

| | |
|-----------------------|-------|
| APD 1-2-way | 7-24 |
| APD 4-7-way | 25-41 |
| APD Sensor Connectors | 42-43 |
| APD 19-way | 44-54 |
| APD 37 & 51-way | 55-72 |
| APD PCB Versions | 73 |
| Conversion Charts | 74 |
| Part Number Index | 75-76 |

| | | | | | | |
|---------------------------|----------------------------|---------------------------------------|----------------------------|---------------------------------------|---------------------------------------|---------------------------------------|
| APD / ISO 15170 | | | | | | |
| Series | 1-way | 1-way | 2-way | 2-way | 4-way | 4-way |
| Type | Plug | Receptacle Flange / Jam Nut / Snap-In | Plug | Receptacle Flange / Jam Nut / Snap-In | Plug | Receptacle Flange / Jam Nut |
| Contacts Materials | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated |
| Contact style | Machined | Machined | Machined | Machined | Stamped & Formed | Stamped & Formed |
| Page Number | 8 | 9-11 | 19 | 19-21 | 26 | 27-28 |

| | | | | | | |
|---------------------------|------------------------------|------------------------------|----------------------------|----------------------------|---------------------------------------|--|
| APD / ISO 15170 | | | | | | |
| Series | 6/7-way | 6/7-way | Sensor style 1 | Sensor style 2 | 19-way | 19-way |
| Type | Plug | Receptacle Flange / Jam Nut | Receptacle | Receptacle | Plug | Receptacle Flange / Jam Nut / Wire-to-wire |
| Contacts Materials | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated |
| Contact style | Stamped & Formed Machined | Stamped & Formed Machined | Machined | Machined | Stamped & Formed | Stamped & Formed |
| Page Number | 36 | 37-38 | 42 | 43 | 45 | 46-48 |

| | | | | | | |
|---------------------------|------------------------------|------------------------------|------------------------------|------------------------------|---------------------------------------|---------------------------------------|
| APD / ISO 15170 | | | | | | |
| Series | 37-way | 37-way | 51-way | 51-way | 51-way | PCB |
| Type | Plug | Receptacle Flange | Plug | Receptacle Jam Nut | Receptacle Snap In | Receptacle |
| Contacts Materials | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy silver plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated |
| Contact style | Stamped & Formed Machined | Stamped & Formed Machined | Stamped & Formed Machined | Stamped & Formed Machined | Stamped & Formed Machined | Machined |
| Page Number | 56 | 57 | 63 | 65 | 64 | 73 |



The APD 1 / 2-way connectors are derived from ISO 15170 and adapted to applications requiring high power. These versions cover wire ranges from 16 mm² up to 50 mm² power and a power consumption up to 245A. The combination of small size and high power make them an ideal solution for many applications.

Applications for the 1 / 2-way connector include:

- Tail lifts
- On Board Kitchen
- Power Supply for Antennas and Base Stations

Power Distribution in:

- Trucks
- Tractors

Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 0,4 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|-------------------------------|
| Durability | 50 Mating Cycles |
| Coupling Torque | 2 Nm max. |
| Static Load, free connector | 350 N (ISO 15170-2, Sec. 4.6) |

Environmental Data (acc. ISO 15170)

| | |
|----------------------|--|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 (DIN EN 60529)* |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 100 m/s ² , 3 axis, 24h, RT (EN 60512)* |

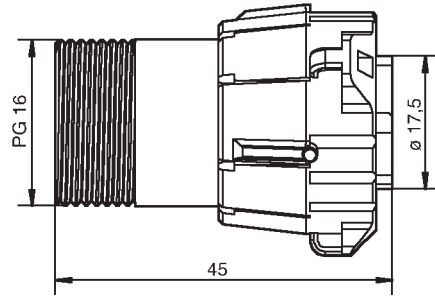
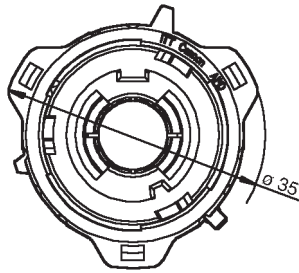
Materials List

| | |
|---------------|-------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | HNBR (alternative FKM) |
| Coupling Nut | PA 66 GF |
| Contacts | Copper Alloy, Ag plated |

* Further information available upon request

Dimensions shown in mm
Specifications and dimensions subject to change

High Power Plug, 1-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| T21583-0012 | APD-5BSH | 5 | blue (RAL 5012) |
| T21583-0013 | APD-6BSH | 6 | red (RAL 2002) |
| T21583-0042 | APD-7BSH | 7 | black (RAL 9005) |

Packaging unit 100 pcs.

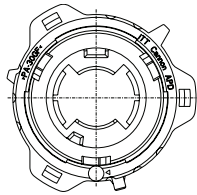
Socket crimp contacts see pages 12 and 13.

Accessories, see pages 15 and 16.

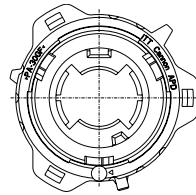
Note: Always use hex nut and cable seal.

Coding, 1-way layouts

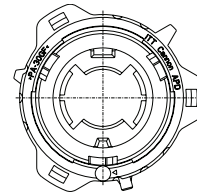
View on Mating Face



Code 5
blue



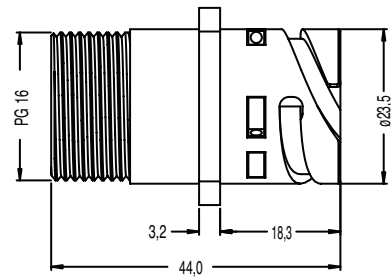
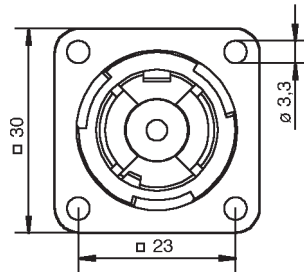
Code 6
red



Code 7
black

Note: the connectors offer both mechanical keying and visual coding by different colors.

High Power Flange Receptacle, 1-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| T21583-0014 | APD-5APH | 5 | blue (RAL 5012) |
| T21583-0015 | APD-6APH | 6 | red (RAL 2002) |
| T21583-0043 | APD-7APH | 7 | black (RAL 9005) |

Packaging unit 100 pcs.

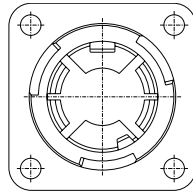
Pin crimp contacts see pages 12, 13 and 14.

Accessories, see pages 15 and 16.

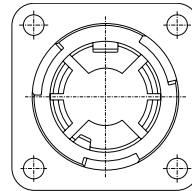
Note: Always use hex nut and cable seal.

Coding, 1-way layouts

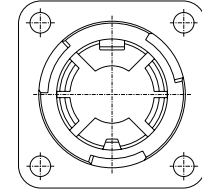
View on Mating Face



Code 5
blue



Code 6
red

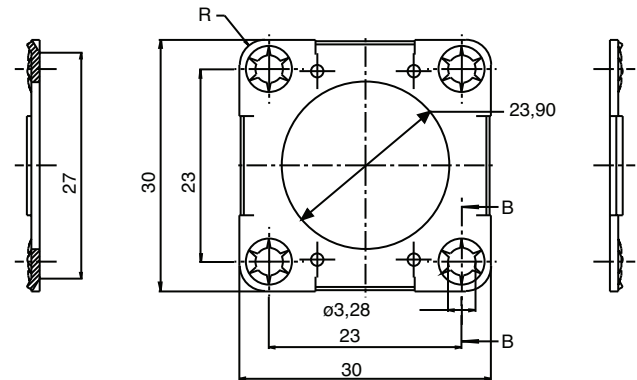
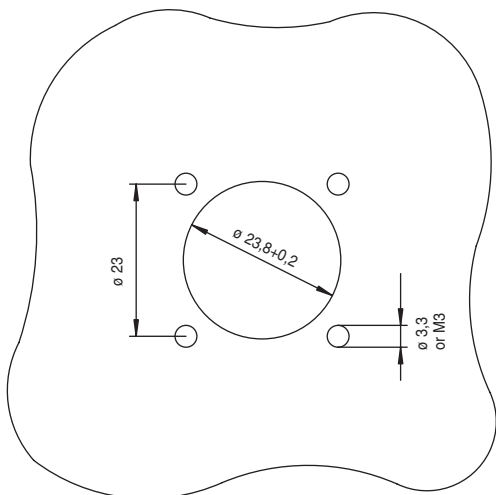


Code 7
black

Note: the connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out

Flange for all Flange Receptacles

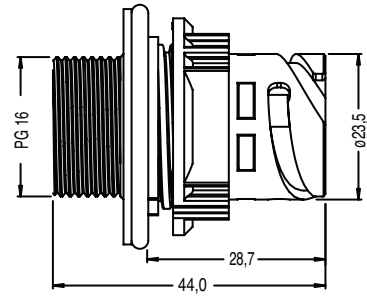
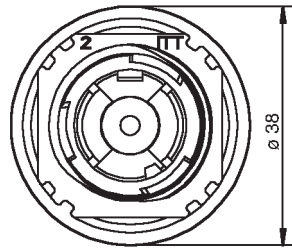


Order Number: 066-8516-005

Metal mounting flange for wall mounting of flange receptacles.

Dimensions shown in mm
Specifications and dimensions subject to change

High Power Jam Nut Receptacle, 1-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0016 | APD-5CPH | 5 | blue (RAL 5012) |
| 121583-0017 | APD-6CPH | 6 | red (RAL 2002) |
| 121583-0217 | APD-7CPH | 7 | black (RAL 9005) |

Packaging unit 100 pcs.

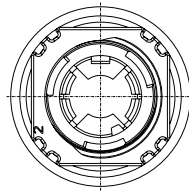
Pin crimp contacts see pages 12, 13 and 14.

Accessories, see pages 15 and 16.

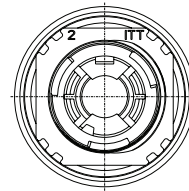
Note: Includes jam nut for wall thickness 1...4 mm. Always use hex nut and cable seal.

Coding, 1-way layouts

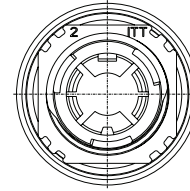
View on Mating Face



Code 5
blue



Code 6
red

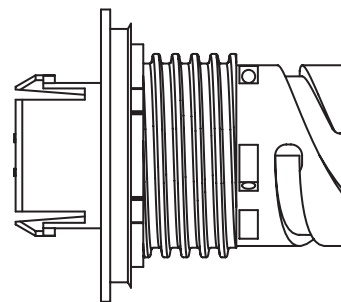
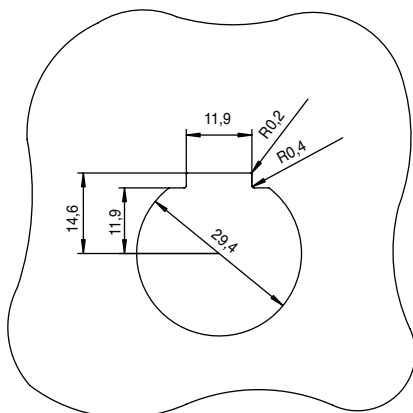


Code 7
black

Note: the connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out

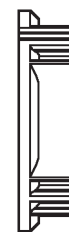
Flange for all Flange Receptacles



Housing



O-ring



Jam Nut

Wall thickness: Standard Jam Nut: min. 1,0 / max. 4,0 mm Special Jam Nut: min. 2,0 / max. 5,0 mm

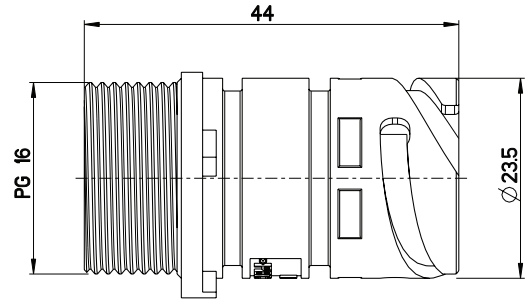
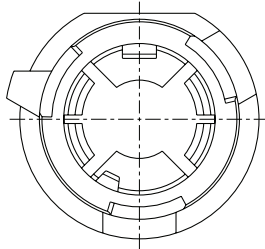
Jam Nut, special

| Designation | Order No. |
|---|--------------|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |



Dimensions shown in mm
Specifications and dimensions subject to change

High Power Snap-In Receptacle, 1-way



| Order No. | Designation | Code | Color |
|-----------------|-------------|------|------------------|
| 249-8619-005 | APD-7SPH | 7 | black (RAL 9005) |
| 249-8619-006 | APD-6SPH | 6 | red (RAL 2002) |
| consult factory | APD-5SPH | 5 | blue (RAL 5012) |

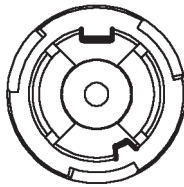
Packaging unit 100 pcs.

Pin crimp contacts see pages 12, 13 and 14.
 Accessories, see pages 15 and 16.

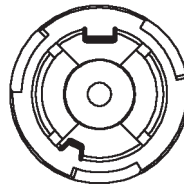
Note: Always use hex nut and cable seal.

Coding, 1-way layouts

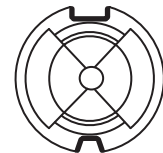
View on Mating Face



Code 5
blue



Code 6
red



Code 7
black

Note: the connectors offer both mechanical keying and visual coding by different colors.

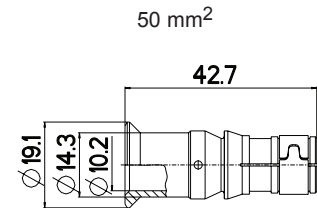
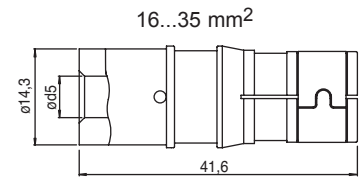
Panel Cut Out

3D data for design of snap-in cut out available on request. Please consult factory.

Machined Socket Crimp-Contacts, High Performance Copper, Silver plated

| Order No. | AWG | Contact size | d5+0,15 |
|---------------------------------------|------------|--------------|---------|
| 031-8521-030 (16,00 mm ²) | | 0 | 6,2 |
| 031-8521-010 (25,00 mm ²) | 4 | 0 | 7,6 |
| 031-8521-020 (35,00 mm ²) | 2 | 0 | 9,1 |
| 031-8646-015 (50,00 mm ²) | with bunch | 0 | 10,2 |

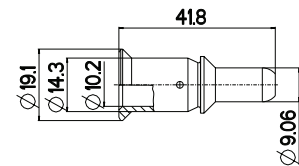
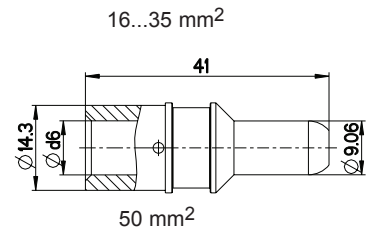
Packaging unit 100 pcs.



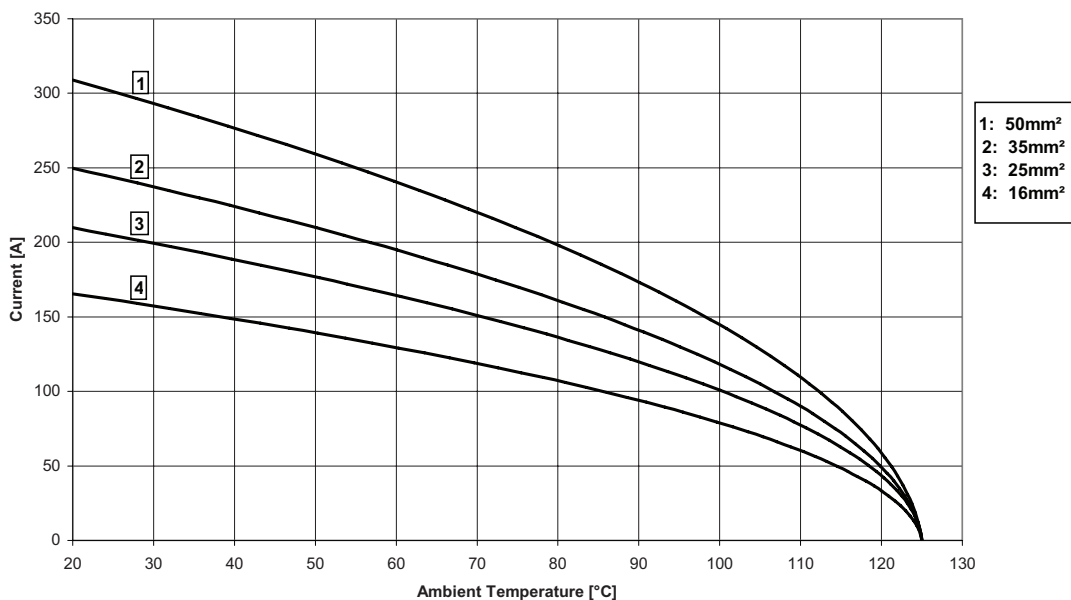
Machined Pin Crimp Contacts, High Performance Copper, Silver plated

| Order No. | AWG | contact size | d6+0,15 |
|---------------------------------------|------------|--------------|---------|
| 030-8614-030 (16,00 mm ²) | | 0 | 6,2 |
| 030-8614-010 (25,00 mm ²) | 4 | 0 | 7,6 |
| 030-8614-020 (35,00 mm ²) | 2 | 0 | 9,1 |
| 030-8581-029 (50,00 mm ²) | with bunch | 0 | 10,2 |

Packaging unit 100 pcs.



Derating Curve, High Performance Copper Contact

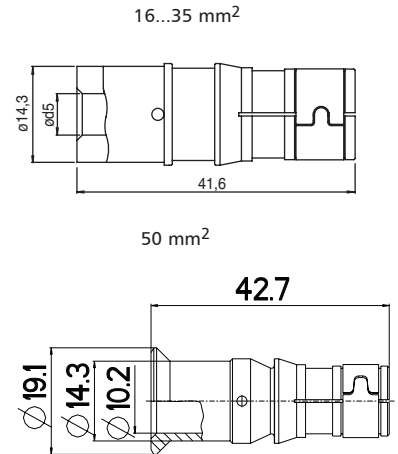


Machined Socket Crimp-Contacts, Standard Brass, Silver plated

| Order No. | AWG | Contact size | d5+0,15 |
|---------------------------------------|------------|--------------|---------|
| 031-8531-010 (16,00 mm ²) | | 0 | 6,2 |
| 031-8531-011 (25,00 mm ²) | 4 | 0 | 7,6 |
| 031-8531-012 (35,00 mm ²) | 2 | 0 | 9,1 |
| 031-8531-013 (50,00 mm ²) | with bunch | 0 | 10,2 |

Packaging unit 100 pcs.

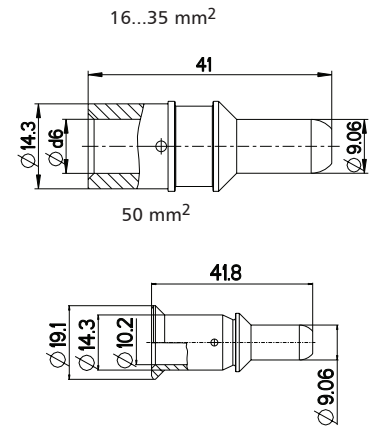
*Available by Request



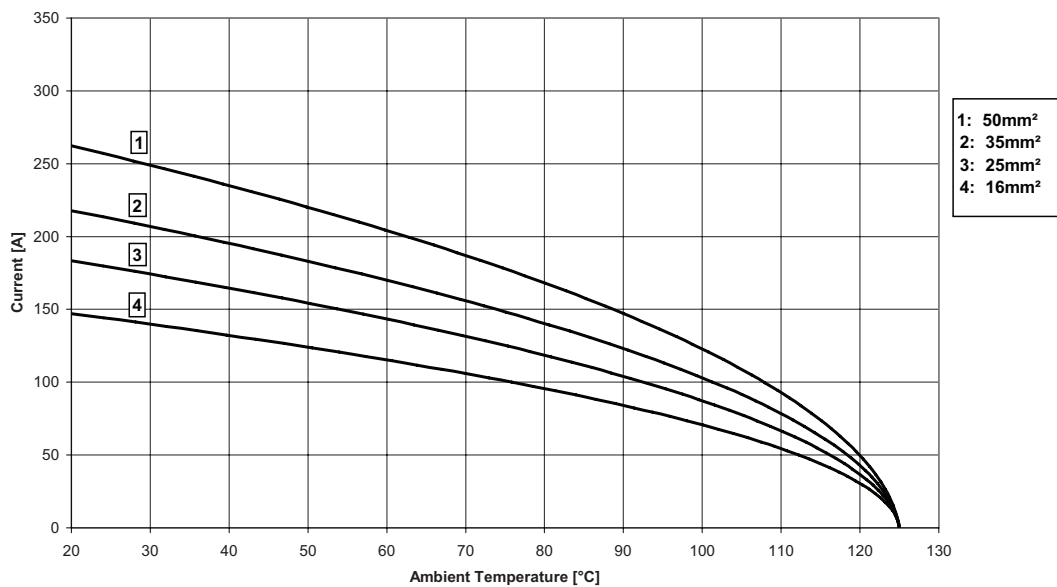
Machined Pin Crimp Contacts, Standard Brass, Silver plated

| Order No. | AWG | contact size | d6+0,15 |
|---------------------------------------|------------|--------------|---------|
| 030-8581-030 (16,00 mm ²) | | 0 | 6,2 |
| 030-8581-031 (25,00 mm ²) | 4 | 0 | 7,6 |
| 030-8581-032 (35,00 mm ²) | 2 | 0 | 9,1 |
| 030-8581-033 (50,00 mm ²) | with bunch | 0 | 10,2 |

Packaging unit 100 pcs.



Derating Curve, Standard Brass Contact



Dimensions shown in mm
Specifications and dimensions subject to change



A new finger protected pin contact has been implemented for the APD High Power 1-way connector series.

Applications for the 1-way connector include:

- Tail lifts
- On Board Navigation
- Power Supply for Antennas and Base Stations

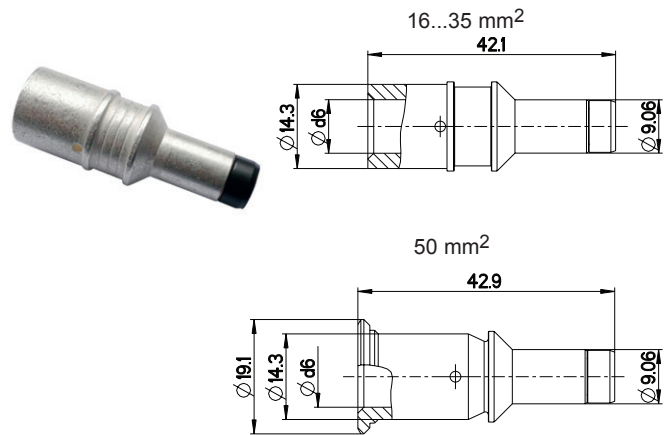
Power Distribution in:

- Trucks
- Tractors
- Hybrid and Electric Vehicles

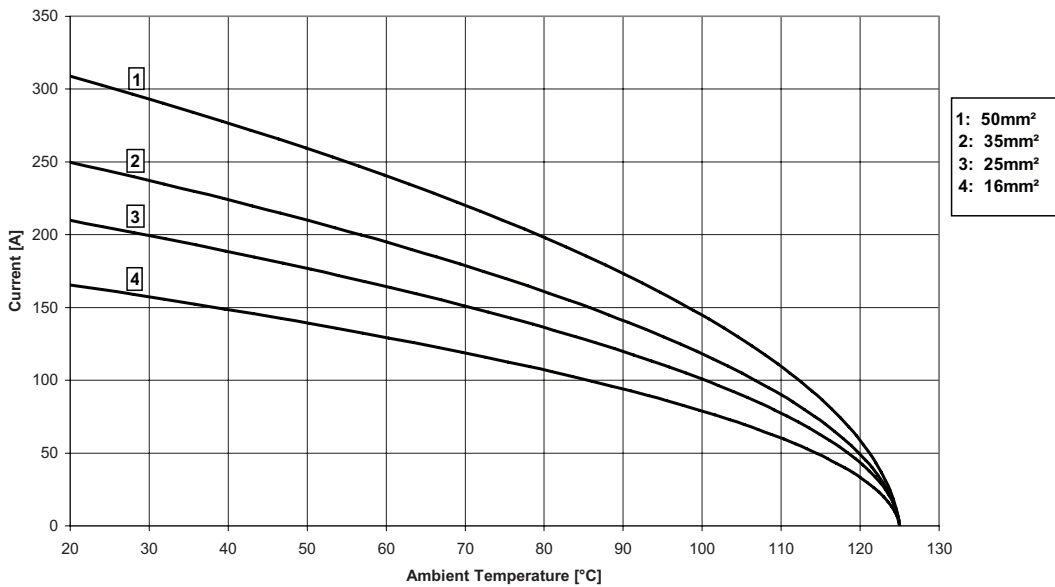
Machined Pin Crimp Contacts, High Performance Copper, Silver plated, Finger Protected

| Order No. | AWG | Contact size | d5+0,15 |
|--------------------------------------|------------|--------------|---------|
| 120110-0229 (16,00 mm ²) | | 0 | 6,2 |
| 120110-0220 (25,00 mm ²) | 4 | 0 | 7,6 |
| 120110-0221 (35,00 mm ²) | 2 | 0 | 9,1 |
| 120110-0222 (50,00 mm ²) | with bunch | 0 | 10,2 |

Packaging unit 100 pcs.



Derating Curve, High Performance Copper Contact, Finger Protected



Sealing Cap for Receptacle

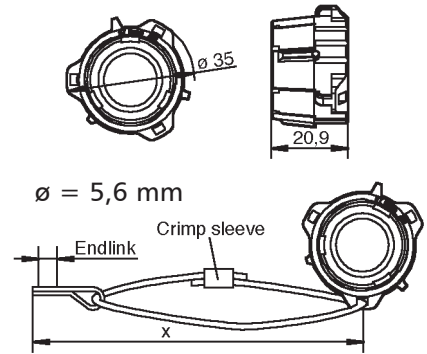
Designation Order No.
 APD-DP 121583-0021

Packaging unit 100 pcs.

APD-DP with rope, end link and eyelet
 X = Total rope length upon request

Order number 120110-0026* X~9cm

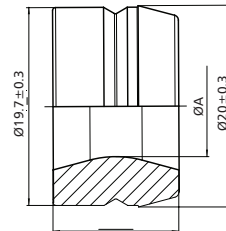
* for other lengths please consult the factory



Cable Seal for Cable (in acc. to DIN 670722 FLY/ DIN 72551 FLRY) High Power 1-way

| Order No. | Insulation \varnothing | \varnothing A mm |
|--------------|--------------------------|--------------------|
| 351-8697-005 | 5,8 - 7,4 | 5,4 |
| 351-8697-014 | 7,4 - 8,4 | 6,5 |
| 351-8697-009 | 8,4 - 10,0 | 8,0 |
| 351-8697-001 | 10,4 - 12,0 | 10,0 |
| 351-8697-002 | 12,3 - 13,9 | 11,9 |
| 351-8697-003 | 14,2 - 15,8 | 13,8 |

Packaging unit 100 pcs.

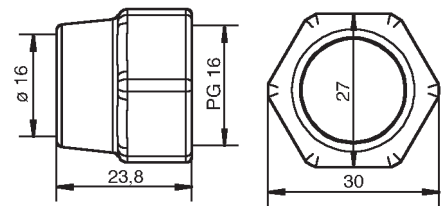


Hexagonal Nut

High Power 1-way

Order No. 217-8516-010

Packaging unit 100 pcs.

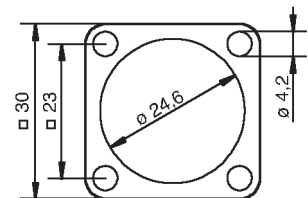


Flange Gasket

For Flange Receptacle, High Power 1-way

Order No. 075-8503-000 (-55/125°C)
075-8503-004 (-30/200°C)

Packaging unit 100 pcs.
 Nominal Width: 17



Adaptor for Flex Tube

For 1-way Plug and Receptacle

Order No. 980-8672-010 (\varnothing 17 mm)

Packaging unit 100 pcs.



90° Endbell

For 1-way Plug and Receptacle up to 25 mm² wire

Order No.: 980-8672-004

Packaging unit 100 pcs.



\varnothing max. = 17,4 mm
 thread = PG 16

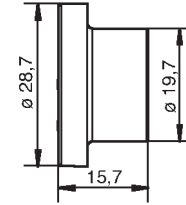
Dimensions shown in mm
 Specifications and dimensions subject to change



Dust Cap for Plug

Order No. 025-8636-005

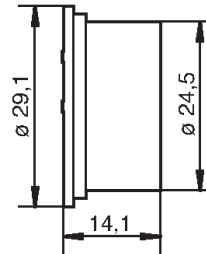
Packaging unit 100 pcs.



Dust Cap for Receptacle

Order No. 025-0480-000

Packaging unit 100 pcs.



Blind Socket for 1 / 2 / 4 / 6 / 7-way

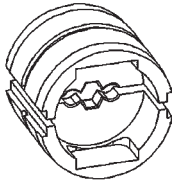
Order No. 120110-0217

Packaging unit 100 pcs.

Note: All cavities closed, mates with 1-7-way APD versions.



Tooling for 1-way High Power Connectors



| Contact / Socket | Crimp-Dies |
|--|-------------|
| 031-8561-000 (50,00 mm ₂) | 121586-5229 |
| 031-8521-020 (35,00 mm ₂ / AWG 2) | 121586-5229 |
| 031-8521-010 (25,00 mm ₂ / AWG 4) | 121586-5229 |
| 031-8521-030 (16,00 mm ₂) | 121586-5229 |
| Contact / Pin | Crimp-Dies |
| 030-8592-000 (50,00 mm ₂) | 121586-5229 |
| 030-8614-020 (35,00 mm ₂ / AWG 2) | 121586-5229 |
| 030-8614-010 (25,00 mm ₂ / AWG 4) | 121586-5229 |
| 030-8614-030 (16,00 mm ₂) | 121586-5229 |
| Optional locator | 121586-5232 |

Assembly Tools Jam Nut Receptacle

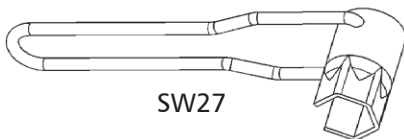
Square box spanner for torque moment wrench to fix the jam nut.



| Designation | Order No. |
|-------------|--------------|
| SS627G | 317-8649-034 |

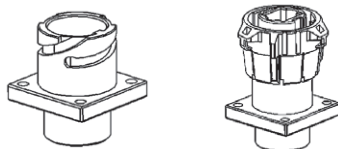
Assembly Tools (Hexagonal Nut)

To fix the hexagonal fixing nut 217-8516-010.



| Order No. | 980-8672-005 |
|---------------------|--------------|
| Torque: 2.5 ± 0.5Nm | |

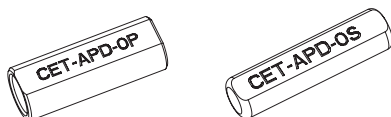
Assembly and Torque Wrench Adapter



| Designation | Order No. |
|---------------|--------------|
| MA-APD-1/ 2-P | 248-8653-063 |
| MA-APD-1/ 2-R | 249-8619-010 |
| 1/4" adaption | |

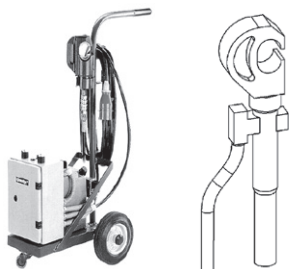
Contract Extraction Tool

Housing can not be reused.



| Designation | Order No. |
|-------------|-------------|
| CET-APD-#OP | 121586-5192 |
| CET-APD-#OS | 121586-5193 |

Crimp Tool



| Crimp Tool | Designation | Order No. |
|--------------------------------------|-------------|-------------|
| Hydraulic, hand operated: | HPW400U-ITT | 121586-5257 |
| Electro-hydraulic, 230 V AC operated | HP400EL-ITT | 121586-5253 |

For detailed assembly instruction please see CAS 25023.

Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 2 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|-------------------------------|
| Durability | 50 Mating Cycles |
| Coupling Torque | 2 Nm max. |
| Static Load, free connector | 350 N (ISO 15170-2, Sec. 4.6) |

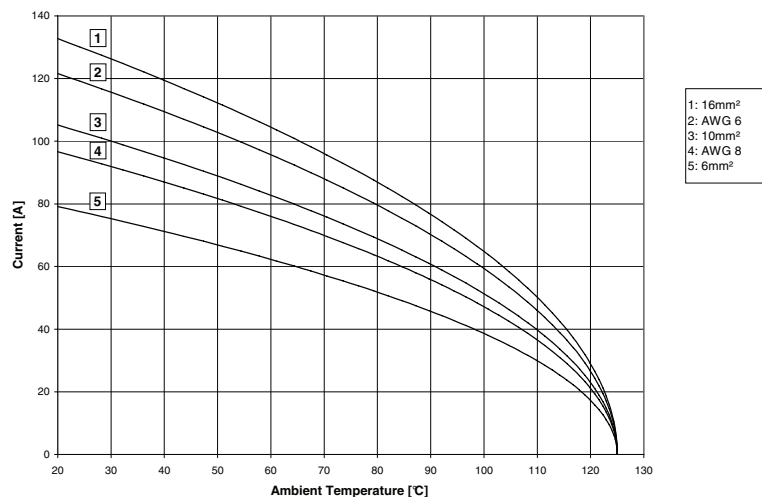
Environmental Data (acc. ISO 15170)

| | |
|---------------------|--|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 (DIN EN 60529)* |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |

Materials List

| | |
|---------------|-------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | HNBR (alternative FKM) |
| Coupling Nut | PA 66 GF |
| Contacts | Copper Alloy, Ag plated |

Derating Curve

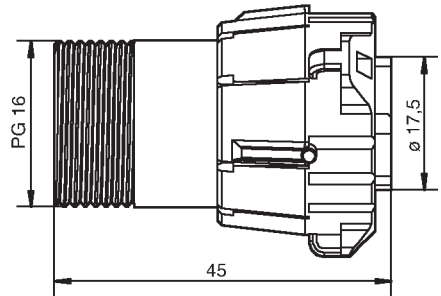
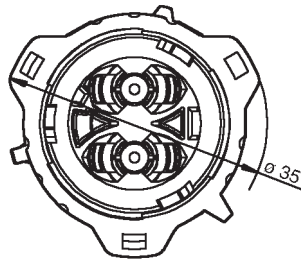


Further information available upon request.



Dimensions shown in mm
Specifications and dimensions subject to change

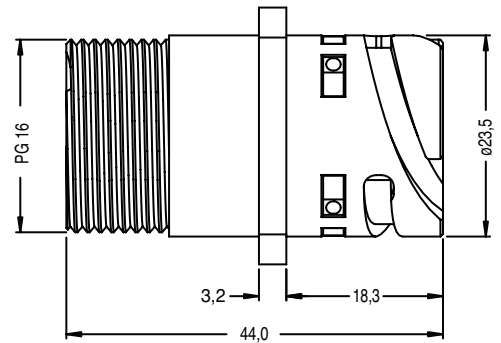
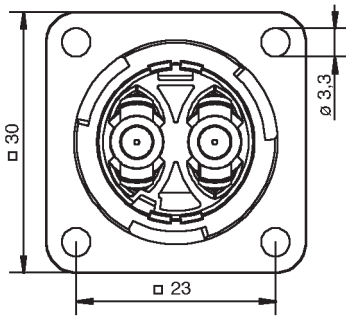
High Power Plug, 2-way



| Order No. | Designation | Code | Color |
|-------------|----------------|------|------------------|
| 121583-0083 | APD-1BSH8-2-12 | 1 | grey (RAL 7036) |
| 121583-0025 | APD-1BSH8-2 | 1 | black (RAL 9005) |
| 121583-0084 | APD-1BSH8-2-14 | 1 | blue (RAL 5012) |

Packaging unit 100 pcs.
 Socket Crimp contacts see page 22.
 Accessories, see pages 22 and 23.
 Note: Always use hex nut and cable seal.

High Power Flange Receptacle, 2-way

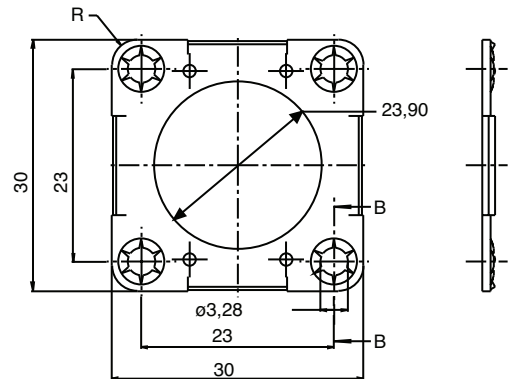
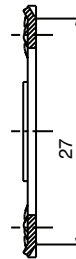
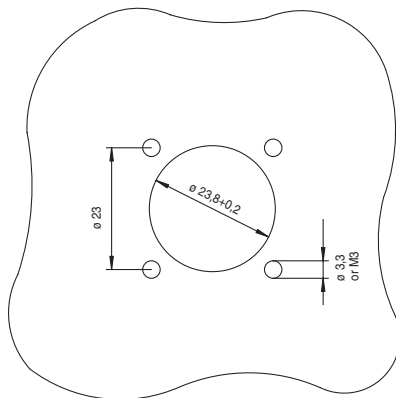


| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0026 | APD-1APH8-2 | 1 | black (RAL 9005) |

Packaging unit 100 pcs.
 Pin crimp contacts see page 22.
 Accessories, see pages 22 and 23.
 Note: Always include hex nut and cable seal.

Panel Cut Out

Flange for all Flange Receptacles

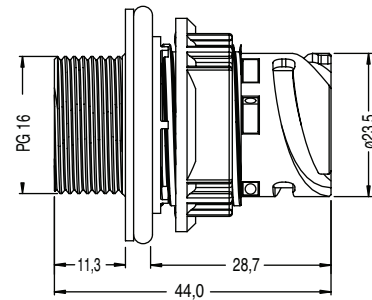
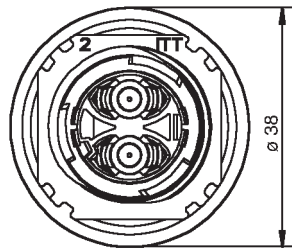


Order Number: 066-8516-005

Note: Metal mounting flange for wall mounting of flange receptacles.

Dimensions shown in mm
 Specifications and dimensions subject to change

High Power Jam Nut Receptacle, 2-way



| Order No. | Designation | Code | Color |
|-------------|----------------|------|------------------|
| 121583-0085 | APD-1CPH8-2-12 | 1 | grey (RAL 7036) |
| 121583-0027 | APD-1CPH8-2 | 1 | black (RAL 9005) |
| 121583-0086 | APD-1CPH8-2-14 | 1 | blue (RAL 5012) |

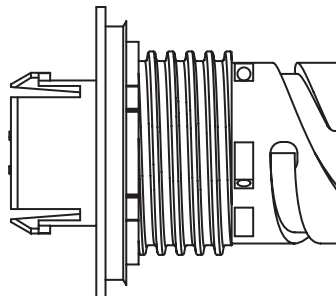
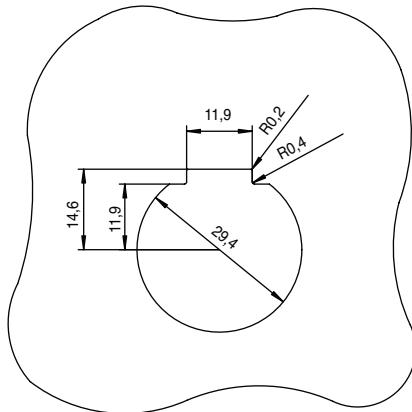
Packaging unit 100 pcs.

Pin crimp contacts see page 22.
Accessories, see pages 22 and 23.

Note: Includes jam nut for wall thickness 1..4 mm. Always use hex nut and cable seal.

Panel Cut Out

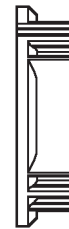
Flange for all Flange Receptacles



Housing



O-ring



Jam Nut

Wall Thickness:

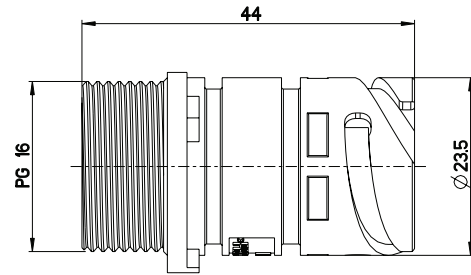
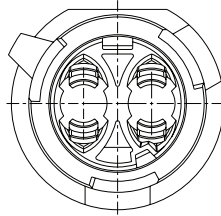
Standard Jam Nut: min. 1,0 / max. 4,0 mm
Special Jam Nut: min. 2,0 / max. 5,0 mm

Jam Nut, special

| Designation | Order No. |
|---|--------------|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |



High Power Snap-In Receptacle, 2-way



| Order No. | Designation | Code | Color |
|--------------|-------------|------|------------------|
| 249-8619-007 | APD-1SPH8-2 | 1 | black (RAL 9005) |

Packaging unit 100 pcs.

Pin crimp contacts see page 22.
 Accessories, see pages 22 and 23.
 Note: Always use hex nut and cable seal.

Panel Cut Out

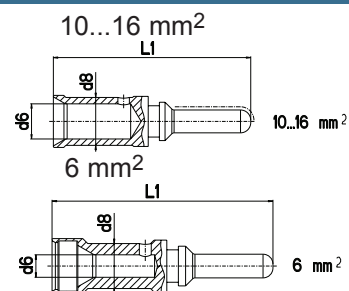
3D data for design of snap-in cut out available on request. Please consult factory.

Machined Pin Crimp Contacts, Standard Silver Plated

| Order No. | d6 | d8 | L1 |
|--|-----|-----|------|
| 430-8645-000 (6,00 mm ²) * | 3,4 | 6,8 | 33,4 |
| 430-8645-009 (10,00 mm ²) | 4,3 | 6,8 | 30,9 |
| 430-8645-003 (AWG 8) | 3,8 | 6,8 | 30,9 |
| 430-8645-002 (AWG 6) | 5,3 | 6,8 | 30,9 |
| 430-8645-007 (16,00 mm ²) | 5,5 | 7,5 | 30,9 |

Packaging unit 100 pcs.

* use individual wire seal or grommet

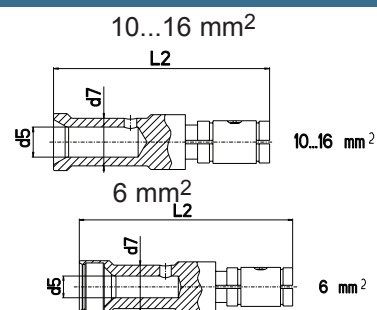


Machined Socket Crimp Contacts, Standard Silver Plated

| Order No. | d5 | d7 | L2 |
|--|-----|-----|------|
| 031-8646-010 (6,00 mm ²) * | 3,4 | 6,8 | 33,4 |
| 031-8646-011 (10,00 mm ²) | 4,3 | 6,8 | 30,9 |
| 031-8646-002 (AWG 8) | 3,8 | 6,8 | 30,9 |
| 031-8646-003 (AWG 6) | 5,3 | 6,8 | 30,9 |
| 031-8646-001 (16,00 mm ²) | 5,5 | 7,5 | 30,9 |

Packaging unit 100 pcs.

* use individual wire seal or grommet

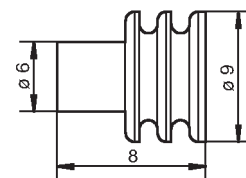


Individual Wire Seals

For High Power 2-way 6 mm² only

| Designation | Order No.: |
|-------------|-------------|
| 16GN5824 | 121668-0035 |

wire insulation ø 4,3 - 4,8 mm / green



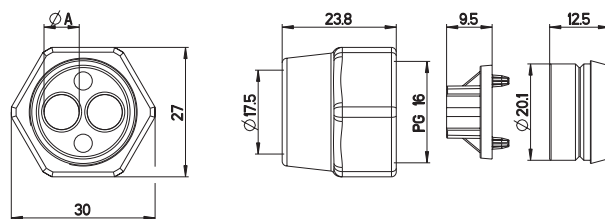
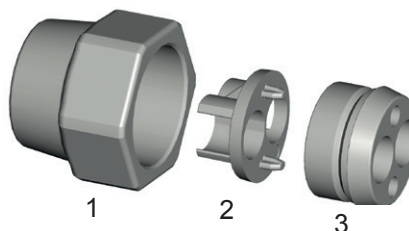
Cable Sealing Set

For High Power 2-way

Set consists of:
 Hexagonal Nut (1)
 Compression Support Plate for Cable Seal (2)
 Cable Seal for Cable (3)

| Order No. | Wire Insulation Ø | Ø A |
|-------------|-------------------|-----|
| 121583-1000 | 4,2 - 5,8 | 3,8 |
| 121583-1001 | 5,7 - 7,3 | 5,3 |
| 121583-1002 | 7,4 - 8,3 | 7,3 |
| 121583-1003 | 6,8 - 8,3 | 6,5 |

Packaging unit 100 pcs.

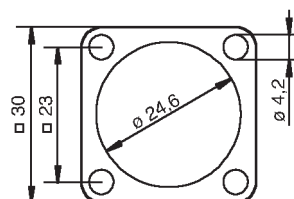


Flange Gasket

For Flange Receptacle, High Power 2-way

| Order No. |
|--------------------------|
| 075-8503-000 (-55/125°C) |
| 075-8503-004 (-30/200°C) |

Packaging unit 100 pcs.



Dimensions shown in mm
 Specifications and dimensions subject to change

Sealing Cap for Receptacle

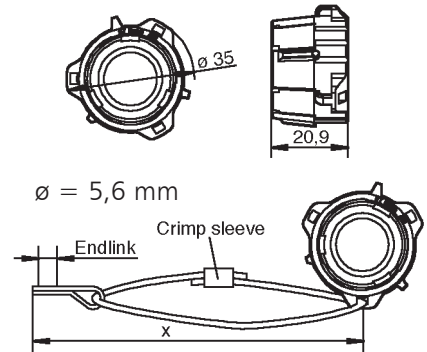
Designation Order No.
 APD-DP 121583-0021

Packaging unit 100 pcs.

APD-DP with rope, end link and eyelet
 X = Total rope length upon request

Order number 120110-0026* X~9cm

* for other lengths please consult the factory



Adaptor for Flex Tube

For 2-way Plug and Receptacle

Order No. 980-8672-010 (ø 17 mm)

Packaging unit 100 pcs.
 Nominal Width: 17



90° Endbell

For 2-way Plug and Receptacle

Order No.: 980-8672-004

Packaging unit 100 pcs.

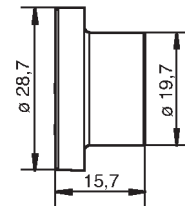


ø max. = 17,4 mm
 thread = PG 16

Dust Cap for Plug

Order No. 025-8636-005

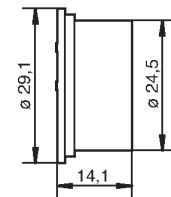
Packaging unit 100 pcs.



Dust Cap for Receptacle

Order No. 025-0480-000

Packaging unit 100 pcs.



Blind Socket for 1 / 2 / 4 / 6 / 7-way

Order No. 120110-0217

Packaging unit 100 pcs.

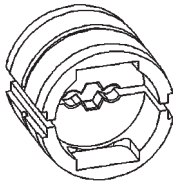
Note: All cavities closed, mates with 1-7-way APD versions.



Dimensions shown in mm
 Specifications and dimensions subject to change



Crimp Die Tooling for 2-way High Power Connectors

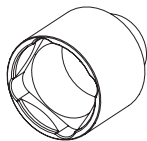


| Contact / Socket | Designation | Order No. |
|---|--------------|-------------|
| 031-8646-010 (6,00 mm ₂) with individual wire seal | CT120090-165 | 120090-0165 |
| 031-8646-011 (10,00 mm ₂) | CT120090-165 | 120090-0165 |
| 031-8646-002 (AWG 8) | CT120090-165 | 120090-0165 |
| 031-8646-003 (AWG 6) | CT120090-165 | 120090-0165 |
| 031-8646-001 (16,0 mm ₂) | CT120090-171 | 120090-0171 |

| Contact / Socket | Designation | Order No. |
|---|--------------|-------------|
| 430-8645-000 (6,00 mm ₂) with individual wire seal | CT120090-165 | 120090-0165 |
| 430-8645-009 (10,00 mm ₂) | CT120090-165 | 120090-0165 |
| 430-8645-003 (AWG 8) | CT120090-165 | 120090-0165 |
| 430-8645-002 (AWG 6) | CT120090-165 | 120090-0165 |
| 430-8645-007 (16,0 mm ₂) | CT120090-171 | 120090-0171 |

Assembly Tools Jam Nut Receptacle

Square box spanner for torque wrench to tighten the jam nut.

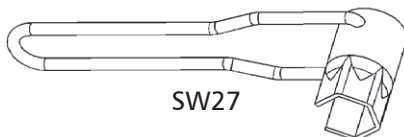


SW30

| | |
|-----------|--------------|
| Order No. | 317-8649-034 |
|-----------|--------------|

Assembly Tools Hexagonal Nut

To tighten the hexagonal fixing nut 217-8516-010.

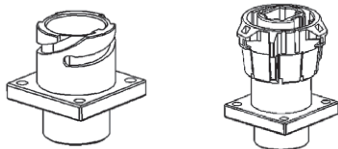


SW27

| | |
|-------------|--------------|
| Designation | Order No. |
| SS627G | 980-8672-005 |

Torque 2,5 +/- 0,5 Nm

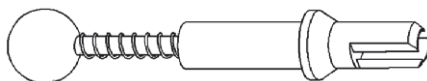
Assembly and Torque Wrench Adapter



| | |
|--------------|--------------|
| Designation | Order No. |
| MA-APD-1/2-P | 248-8653-063 |
| MA-APD-1/2-R | 249-8619-010 |

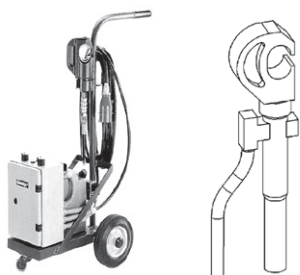
1/4" adaption

Contract Extraction Tool



| | |
|---|-------------|
| Designation | Order No. |
| CET- APD-2 for pin and socket contacts | 121586-5149 |

Crimp Tool



| Crimp Tool | Designation | Order No. |
|---|-------------|-------------|
| Hydraulic, hand operated: | HK120-25 | 121586-5077 |
| Electro-hydraulic, 230 V AC operated | HK12-EL | 121586-5075 |
| Hand Crimp Tool 6 / 10 / 16 mm ₂ | | 121586-5244 |



Dimensions shown in mm
Specifications and dimensions subject to change

APD 4-way connectors are the original DIN72585 (now ISO 15170) versions using a 2,5 mm contact system.

Designed for automotive applications they also meet the requirements of transportation, off-road and special vehicle markets.

Applications for the 4- and 7-way connector include:

- Sensors
- Traction / Skid Control
- Brake Control
- Magnetic Switch Control Systems
- Lightening systems on Trucks and Trailers



Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|------------------------------|---|
| Durability | 50 Mating Cycles |
| Coupling Torque | 1,2 Nm max. |
| Static Load, mated Connector | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| Static Load, free connector | 350 N (ISO 15170-2, Sec. 4.6) |

Environmental Data (acc. ISO 15170)

| | |
|----------------------|---|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 and IP 69k (DIN EN 60529)* |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 300m/s ² , 3 x 100h, RT and 120°C (ISO 15170-2)* |

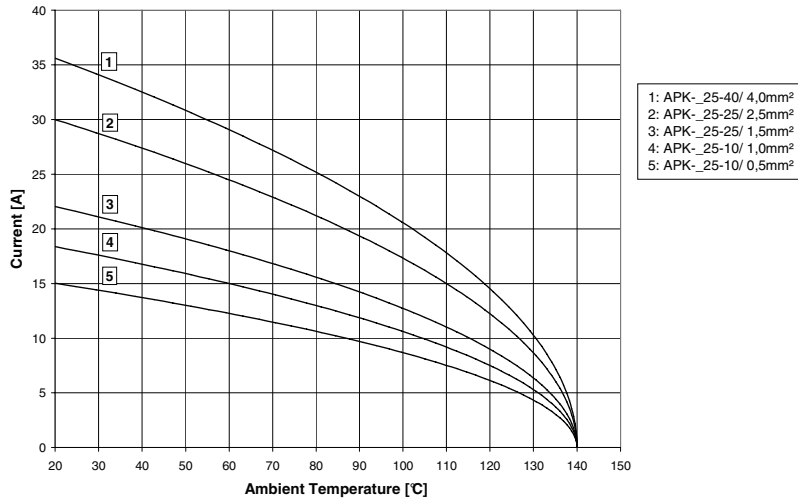
Materials List

| | |
|---------------|-------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | HNBR (alternative FKM) |
| Coupling Nut | PA 66 GF |
| Contacts | Copper Alloy, Ag plated |

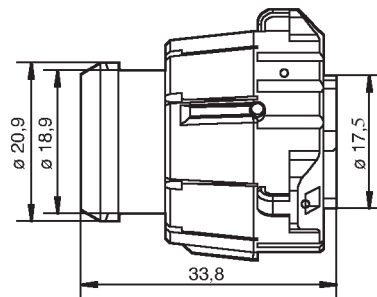
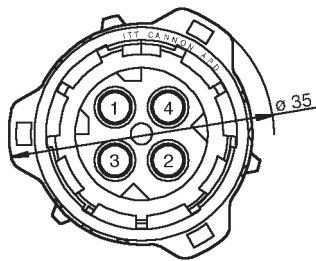
* Further information available upon request

Dimensions shown in mm
Specifications and dimensions subject to change

Derating Curve



Plug, 4-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0000 | APD-1BS-K2 | 1 | black (RAL 9005) |
| 121583-0001 | APD-2BS-K2 | 2 | grey (RAL 7036) |
| 121583-0002 | APD-3BS-K2 | 3 | green (RAL 6029) |
| 121583-0003 | APD-4BS-K2 | 4 | blue (RAL 5012) |

Packaging unit 100 pcs.

Socket crimp contacts see page 32.
Accessories, see pages 32 and 33.

Coding, 4-way layouts

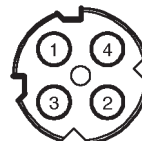
View on Mating Face



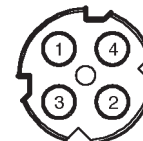
Code 1
black



Code 2
grey



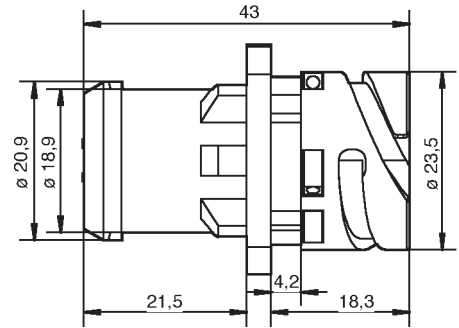
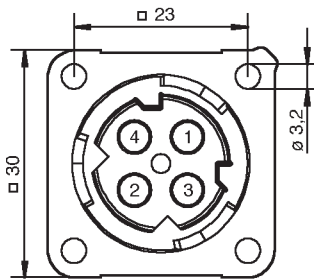
Code 3
green



Code 4
blue

Note: The connectors offer both mechanical keying and visual coding by different colors.

Flange Receptacle, 4-way



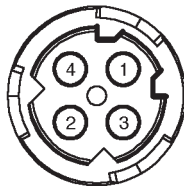
| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0004 | APD-1AP-K2 | 1 | black (RAL 9005) |
| 121583-0005 | APD-2AP-K2 | 2 | grey (RAL 7036) |
| 121583-0006 | APD-3AP-K2 | 3 | green (RAL 6029) |
| 121583-0007 | APD-4AP-K2 | 4 | blue (RAL 5012) |

Packaging unit 100 pcs.

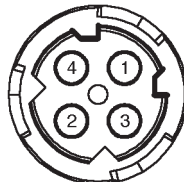
Pin crimp contacts see page 32.
Accessories, see pages 32 and 33.

Coding, 4-way layouts

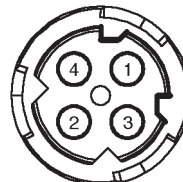
View on Mating Face



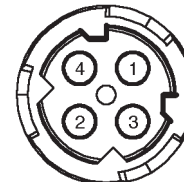
Code 1
black



Code 2
grey



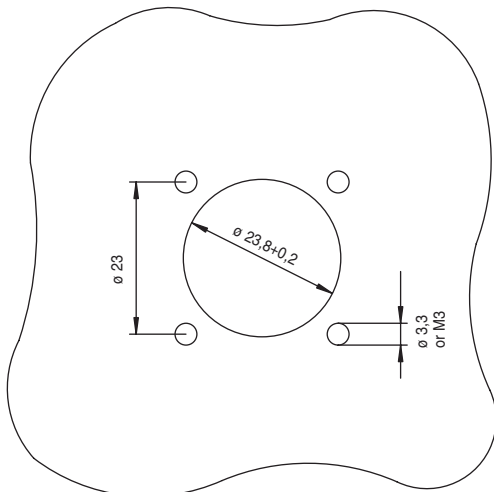
Code 3
green



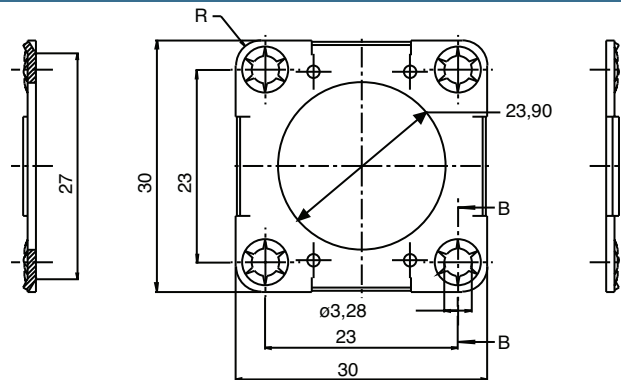
Code 4
blue

Note: The connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out



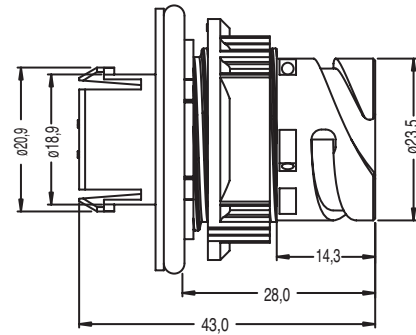
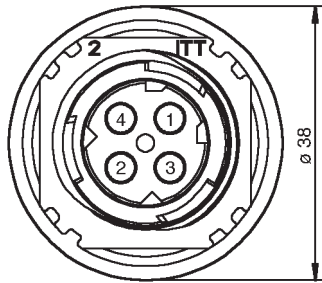
Flange for all Flange Receptacles



Order Number: 066-8516-005

Note: Metal mounting flange for wall mounting of flange receptacle.

Jam Nut Receptacle, 4-way



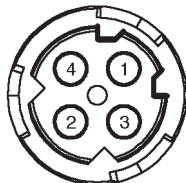
| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0008 | APD-1CP-K2 | 1 | black (RAL 9005) |
| 121583-0009 | APD-2CP-K2 | 2 | grey (RAL 7036) |
| 121583-0010 | APD-3CP-K2 | 3 | green (RAL 6029) |
| 121583-0011 | APD-4CP-K2 | 4 | blue (RAL 5012) |

Packaging unit 100 pcs.

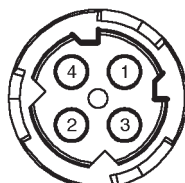
Pin crimp contacts see page 32.
 Accessories, see pages 32 and 33.
 Note: Includes jam nut for wall thickness 1...4 mm.

Coding, 4-way layouts

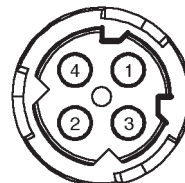
View on Mating Face



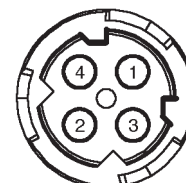
Code 1
black



Code 2
grey



Code 3
green

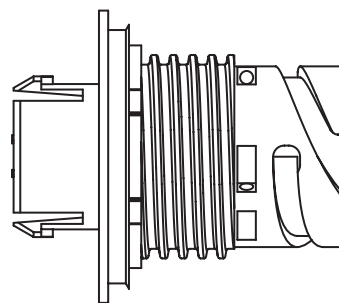
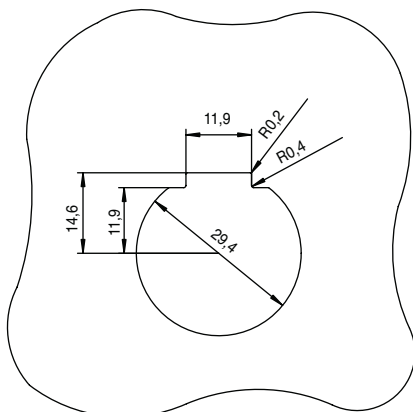


Code 4
blue

Note: The connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out

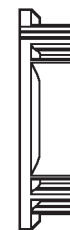
Piece Parts / Assembly Instruction



Housing



O-ring



Jam Nut

Wall Thickness: Standard Jam Nut: min. 1,0 / max. 4,0 mm Special Jam Nut: min. 2,0 / max. 5,0 mm

Jam Nut, special

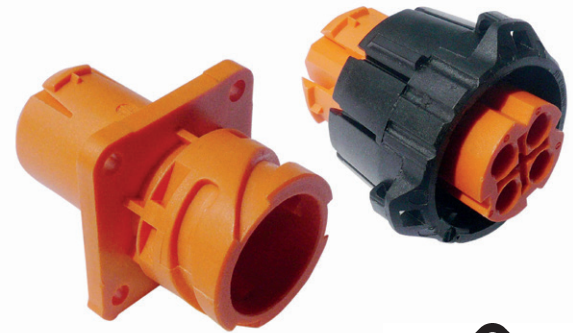
| Designation | Order No. |
|---|--------------|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |

Dimensions shown in mm
 Specifications and dimensions subject to change

APD 4-way connectors are the original DIN72585 (now ISO 15170) versions using a 2,5 mm contact system. Designed for automotive applications they also meet the requirements of transportation, off-road and special vehicle markets. ITT has come up with a new high voltage version of the APD 4-way connector.

Applications for the 4-way connector include:

- Sensors
- Traction / Skid Control
- Brake Control
- Magnetic Switch Control Systems
- Lightening systems on Trucks and Trailers
- Electric Vehicles



Attention! Connector must not be disconnected under load!



REG.-Nr. D587

Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 500 V DC/AC* |
| Operating Current | see derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 3500 VAC, 30 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|------------------------------|---|
| Durability | 50 Mating Cycles |
| Coupling Torque | 1,2 Nm max. |
| Static Load, mated Connector | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| Static Load, free connector | 350 N (ISO 15170-2, Sec. 4.6) |

Environmental Data (acc. ISO 15170)

| | |
|----------------------|---|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 and IP 69k (DIN EN 60529)* |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 300m/s ² , 3 x 100h, RT and 120°C (ISO 15170-2)* |

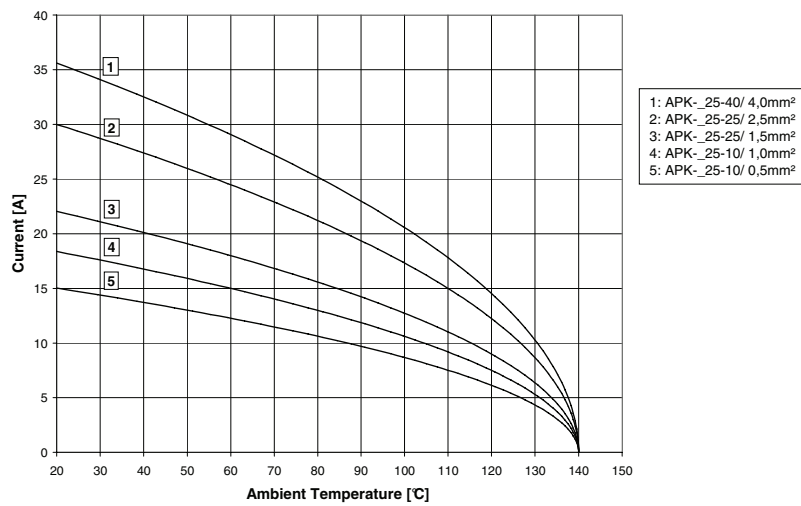
Materials List

| | |
|---------------|-------------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | HNBR (alternative FKM) |
| Coupling Nut | PA 66 GF |
| Contacts | Copper Alloy, Sn or Au plated |

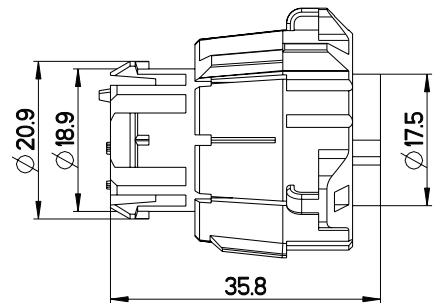
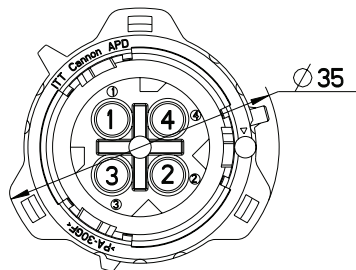
* Further information available upon request

Dimensions shown in mm
Specifications and dimensions subject to change

Derating Curve



Plug, 4-way High Voltage



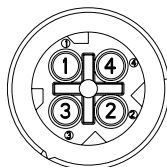
| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0213 | APD-59BS-HV | 5 | orange (RAL 2003) |
| 121583-0214 | APD-69BS-HV | 6 | orange (RAL 2003) |

Packaging unit 100 pcs.

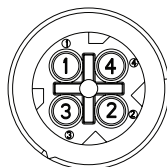
Socket crimp contacts see page 32.
Accessories, see pages 32 and 33.

Coding, 4-way layouts High Voltage

View on Mating Face



Code 5
orange



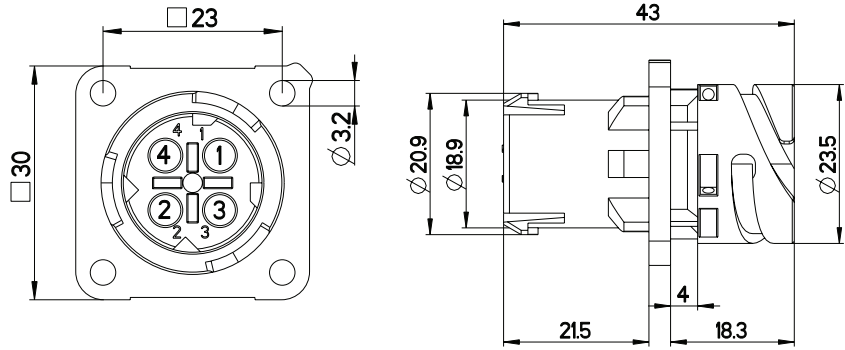
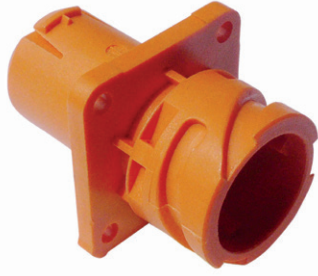
Code 6
orange

Note: The connectors offer both mechanical keying and visual coding by different colors.



Dimensions shown in mm
Specifications and dimensions subject to change

Flange Receptacle, 4-way High Voltage



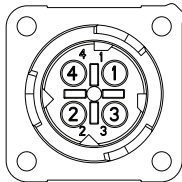
| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0215 | APD-59AP-HV | 5 | orange (RAL 2003) |
| 121583-0216 | APD-69AP-HV | 6 | orange (RAL 2003) |

Packaging unit 100 pcs.

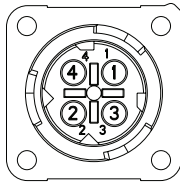
Pin crimp contacts see page 32.
Accessories, see pages 32 and 33.

Coding, 4-way layouts High Voltage

View on Mating Face



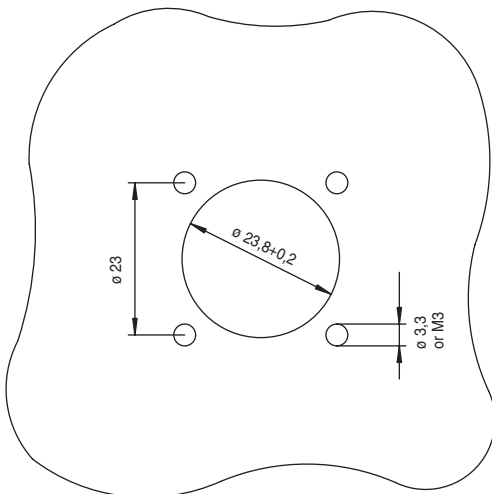
Code 5
orange



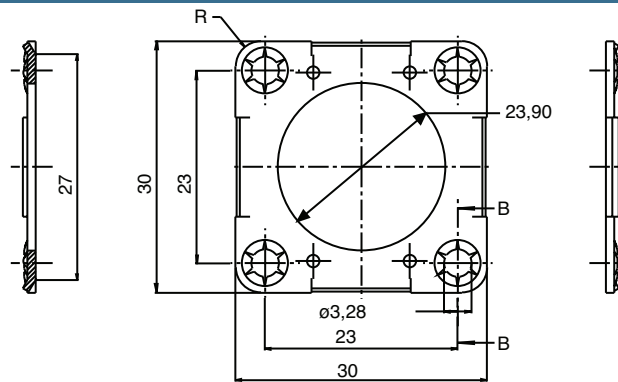
Code 6
orange

Note: The connectors offer mechanical keying.

Panel Cut Out



Flange for all Flange Receptacles



Order Number: 066-8516-005

Metal mounting flange for wall mounting of flange receptacle.

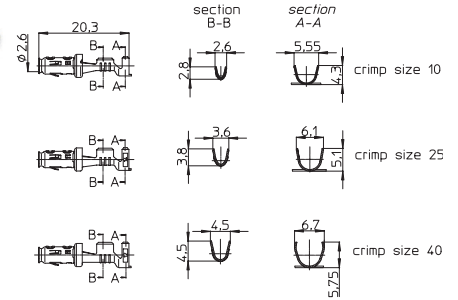
Dimensions shown in mm
Specifications and dimensions subject to change

Socket Crimp-Contacts Standard Tinned, 3000 contacts per reel

| Designation - Standard | Order No. |
|--|-------------|
| APK-SB25A10-002 (0,5 - 1,5 mm ²) | 121668-0125 |
| APK-SB25A25-002 (1,5 - 2,5 mm ²) | 121668-0126 |
| APK-SB25A40-002 (2,5 - 4,0 mm ²) | 121668-0127 |

| Optional with Au-flash | |
|--|-------------|
| APK-SB25H10-002 (0,5 - 1,5 mm ²) | 121668-0022 |
| APK-SB25H25-002 (1,5 - 2,5 mm ²) | 121668-0128 |
| APK-SB25H40-002 (2,5 - 4,0 mm ²) | 121668-0124 |

Note: For versions with silver plating please consult factory.

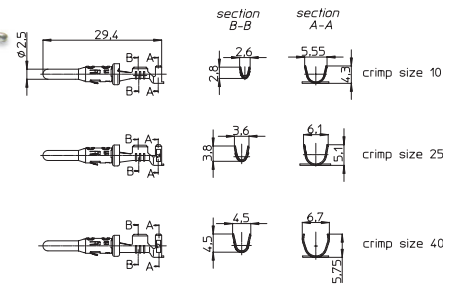


Pin Crimp-Contacts Standard Tinned, 3000 contacts per reel

| Designation - Standard | Order No. |
|--|-------------|
| APK-PB25A10-002 (0,5 - 1 mm ²) | 121668-0026 |
| APK-PB25A25-002 (1,5 - 2,5 mm ²) | 121668-0027 |
| APK-PB25A40-002 (2,5 - 4,0 mm ²) | 121668-0028 |

| Optional with Au-flash | |
|--|-------------|
| APK-PB25H10-002 (0,5 - 1 mm ²) | 121668-0021 |
| APK-PB25H25-002 (1,5 - 2,5 mm ²) | 121668-0029 |
| APK-PB25H40-002 (2,5 - 4,0 mm ²) | 121668-0025 |

Note: For versions with silver plating please consult factory.

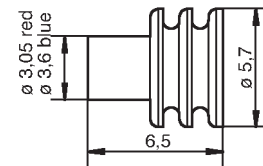


Individual Wire Seals

For all versions 4-way

| Designation | Order No. |
|---|-------------|
| 10RD5821 Wire insulation ø 1,4 - 2,0 mm / red | 121668-0032 |
| 15BL5822 Wire insulation ø 2,1 - 2,9 mm / blue | 121668-0033 |

Note: Packaging unit 5000 pcs.

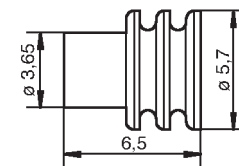


Wire Filler

For all versions 4-way

| Designation | Order No. |
|-------------------|-------------|
| 15WH5823 white | 121668-0034 |

Note: Packaging unit 5000 pcs.

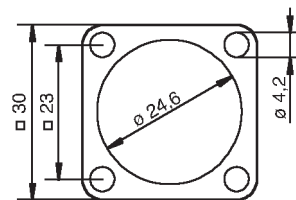


Flange Gasket

For Flange Receptacle, 4-way

| Order No. |
|--------------------------|
| 075-8503-000 (-55/125°C) |
| 075-8503-004 (-30/200°C) |

Packaging unit 100 pcs.



Sealing Cap for Receptacle

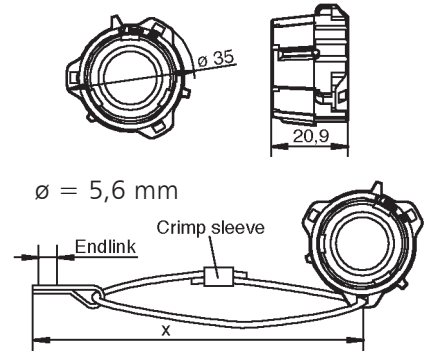
| | |
|-------------|-------------|
| Designation | Order No. |
| APD-DP | 121583-0021 |

Packaging unit 100 pcs.

APD-DP with rope, end link and eyelet
 X = Total rope length upon request

Order number 120110-0026* X~9cm

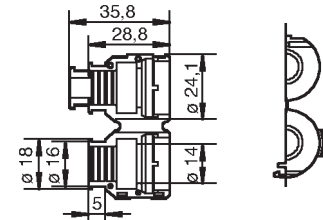
* for other lengths please consult the factory



Straight Endbell for Flex Tube

| | |
|-----------|--------------------------|
| Order No. | 058-8578-100 (ø 8,5 mm) |
| | 058-8578-102 (ø 10,0 mm) |

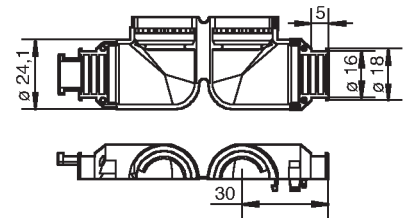
Packaging unit 100 pcs.



90° Endbell for Flex Tube

| | |
|-----------|--------------------------|
| Order No. | 058-8578-101 (ø 8,5 mm) |
| | 058-8578-103 (ø 10,0 mm) |
| | 058-8578-105 (ø 11,0 mm) |

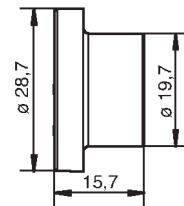
Packaging unit 100 pcs.



Dust Cap for Plug

| | |
|-----------|--------------|
| Order No. | 025-8636-005 |
|-----------|--------------|

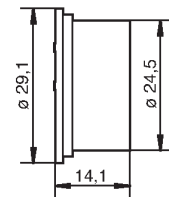
Packaging unit 100 pcs.



Dust Cap for Receptacle

| | |
|-----------|--------------|
| Order No. | 025-0480-000 |
|-----------|--------------|

Packaging unit 100 pcs.



Blind Socket for 1 / 2 / 4 / 6 / 7-way

| | |
|-----------|-------------|
| Order No. | 120110-0217 |
|-----------|-------------|

Packaging unit 100 pcs.

Note: All cavities closed, mates with 1-7-way APD versions.

Dimensions shown in mm
 Specifications and dimensions subject to change

www.ittcannon.com



Crimp and Assembly Tools for APK 25 Contacts

| Contact / Socket | Designation | Order No. |
|--|---------------------|-------------|
| APK-SB25A10-002 (0,5 - 1,0 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |
| APK-SB25A25-002 (1,5 - 2,5 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |
| APK-SB25A40-002 (2,5 - 4,0 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |

| Contact / Pin | Designation | Order No. |
|--|---------------------|-------------|
| APK-PB25A10-002 (0,5 - 1,0 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |
| APK-PB25A25-002 (1,5 - 2,5 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |
| APK-PB25A40-002 (2,5 - 4,0 mm ₂) | CHT-APK-25-002-Seal | 121586-5242 |

Quick Change Tool for above Crimp Machine: (Mini Applicator)



| Contact / Socket | Designation | Order No. (to be mentioned on order) |
|--|-------------------------|---|
| APK-SB25A10-002 (0,5 - 1,0 mm ₂) | WWZ.20-100-APK25-10-002 | 121586-5134 |
| APK-SB25A25-002 (1,5 - 2,5 mm ₂) | WWZ.20-100-APK25-25-002 | 121586-5135 |
| APK-SB25A40-002 (2,5 - 4,0 mm ₂) | WWZ.20-100-APK25-40-002 | 121586-5136 |
| APK-SB25A40-002 (2,5 - 4,0 mm ₂) | WWZ-Mecal-APK25-40-002 | 121586-5249 |

| Contact / Pin | Designation | Order No. (to be mentioned on order) |
|--|-------------------------|---|
| APK-PB25A10-002 (0,5 - 1,0 mm ₂) | WWZ.20-100-APK25-10-002 | 121586-5134 |
| APK-PB25A25-002 (1,5 - 2,5 mm ₂) | WWZ.20-100-APK25-25-002 | 121586-5135 |
| APK-PB25A40-002 (2,5 - 4,0 mm ₂) | WWZ.20-100-APK25-40-002 | 121586-5136 |
| APK-PB25A40-002 (2,5 - 4,0 mm ₂) | WWZ-Mecal-APK25-40-002 | 121586-5249 |

Contact Extraction Tool



| Order No. | Designation |
|-------------|-------------|
| 121086-3278 | CET-APK25 |

APD 6/7-way connectors are a derivative of the 4-way connector providing higher pin counts using a 1,6 mm connector system. They are available as versions with stamped and machined contacts.

Applications for the 6- and 7-way connector include:

- Sensors
- Traction / Skid Control
- Brake Control
- Magnetic Switch Control Systems
- Lightening systems on Trucks and Trailers



Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|--|
| Durability | 50 Mating Cycles |
| Coupling Torque | 1,2 Nm max. |
| Static Load, free connector | 350 N (ISO 15170-2, Sec. 4.6) |
| Dynamic Impact | 2 J (49mm- ball- drop- test, height 400mm) |

Environmental Data (acc. ISO 15170)

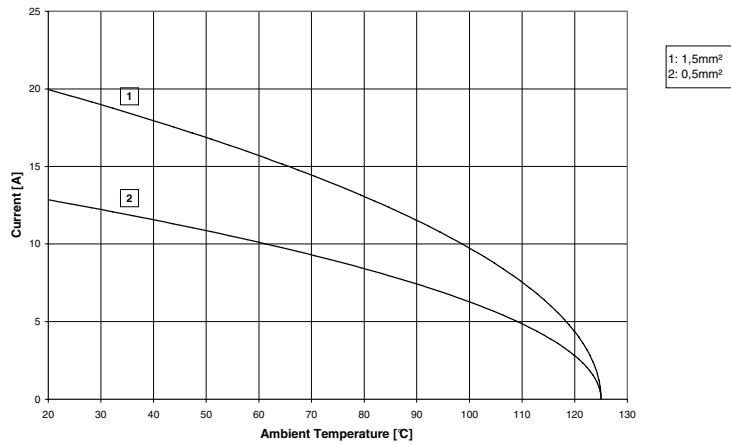
| | |
|----------------------|---|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 and IP 69k (DIN EN 60529)* |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 200m/s ² , 3 x 100h, RT and 120°C (ISO 15170-2)* |

Materials List

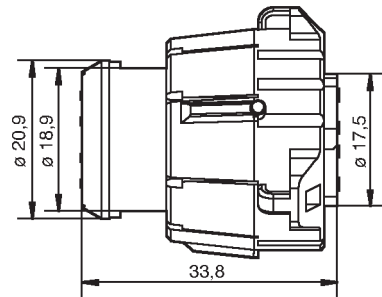
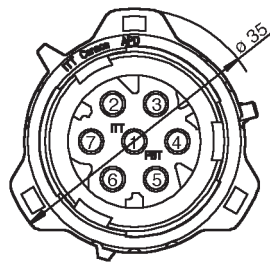
| | |
|---------------|-------------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | HNBR (alternative FKM) |
| Coupling Nut | PA 66 GF |
| Contacts | Copper Alloy, Sn or Au plated |

*Further information upon request

Derating Curve



Plug, 6/7-way



| | Order No. | Designation | Code | Color |
|--------|-------------|-------------|------|------------------|
| 6-way* | 120110-0024 | APD-1BS6 | 1 | black (RAL 9005) |
| 7-way | 121583-0211 | APD-14BS7 | 1 | blue (RAL 5012) |
| 7-way | 121583-0018 | APD-1BS7 | 1 | black (RAL 9005) |

Packaging unit 100 pcs.

Socket crimp contacts see page 39.
 Accessories, see pages 39 and 40.
 *contact cavity 1 closed

Coding, 6/7-way layouts

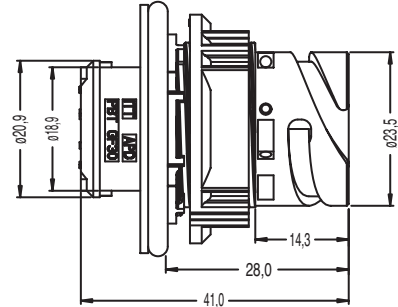
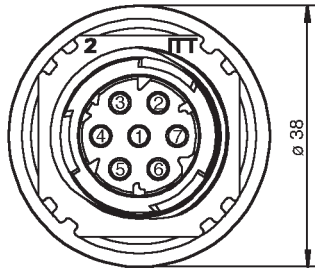


6-way



7-way

Jam Nut Receptacle, 6/7-way for standard contacts

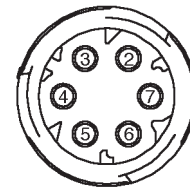


| | Order No. | Designation | Code | Color |
|--------|-------------|-------------|------|------------------|
| 6-way* | 121583-0061 | APD-1CP6 | 1 | black (RAL 9005) |
| 7-way | 121583-0019 | APD-1CP7 | 1 | black (RAL 9005) |

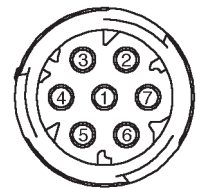
Packaging unit 100 pcs.
* Contact cavity 1 closed

Jam Nut Receptacle, 6/7-way for crimp press-in contacts

| | Order No. | Designation | Code | Color |
|-------|-------------|-------------|------|------------------|
| 6-way | on request | - | - | - |
| 7-way | 121583-0028 | APD-1CP7-EP | 1 | black (RAL 9005) |



6-way

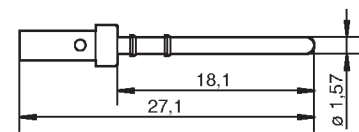


7-way

Press-in Crimp Contact

For Flange and Jam Nut Receptacle

Order No.
330-8672-021 (tinned) (0,75 - 1,5 mm²)
330-8672-019 (tinned) (0,35 - 0,75 mm²)
with gold flash plating upon request
Packaging unit 100 pcs.

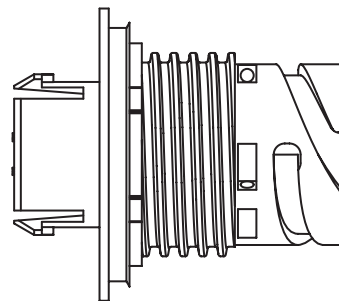
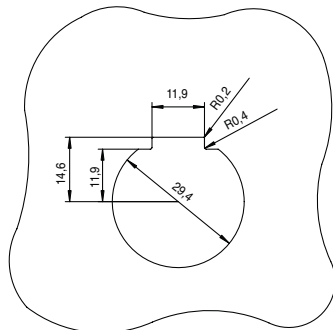


Tooling see page

Note: Press-in Crimp Contacts are not removable after insertion.

Panel Cut Out

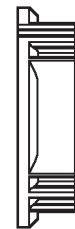
Flange for all Flange Receptacles



Housing



O-ring



Jam Nut

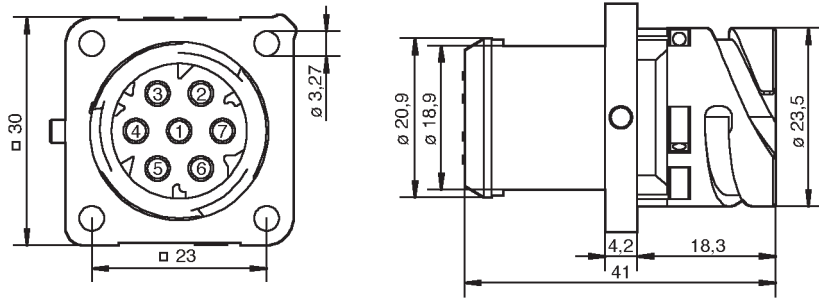
Wall Thickness: Standard Jam Nut: min. 1,0 / max. 4,0 mm Special Jam Nut: min. 2,0 / max. 5,0 mm

Jam Nut, special

| Designation | Order No. |
|---|--------------|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |

Dimensions shown in mm
Specifications and dimensions subject to change

Flange Receptacle, 6/7-way for standard contacts



| | Order No. | Designation | Code | Color |
|--------|-------------|--------------|------|------------------|
| 7-way | 121583-0020 | APD-1AP7 | 1 | black (RAL 9005) |
| 7-way | 121583-0212 | APD-14AP7-EP | 1 | blue (RAL 5012) |
| 6-way* | 120110-0083 | APD-1AP6 | 1 | black (RAL 9005) |

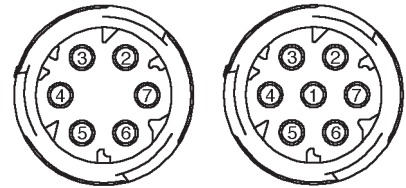
Packaging unit 100 pcs.
* Contact cavity 1 closed

Flange Receptacle, 6/7-way for crimp press-in contacts

| | Order No. | Designation | Code | Color |
|--------|-------------|-------------|------|------------------|
| 6-way* | 120110-0020 | APD-1AP6-EP | 1 | black (RAL 9005) |
| 7-way | 121583-0205 | APD-1AP7-EP | 1 | black (RAL 9005) |

Packaging unit 100 pcs.
* Contact cavity 1 closed

Pin crimp contacts see page 39.
Accessories, see pages 39 and 40.

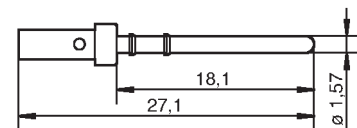


6-way

7-way

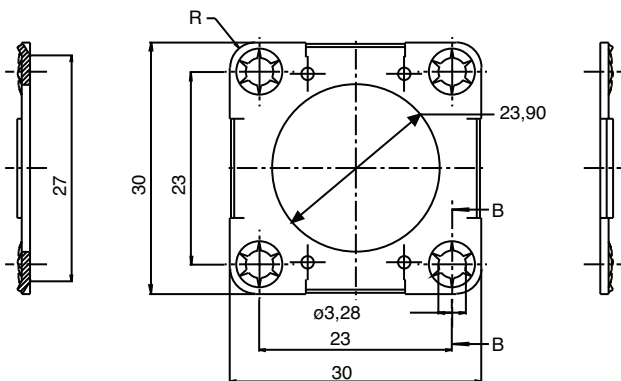
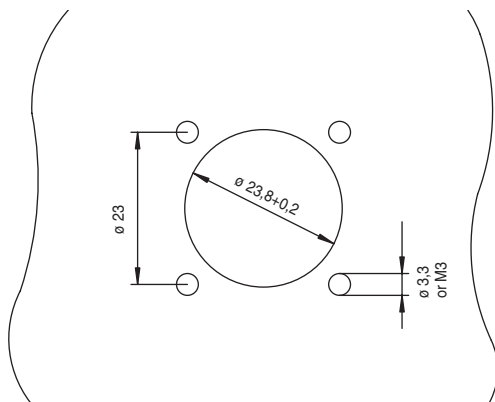
Press-in Crimp Contact For Flange and Jam Nut Receptacle

Order No.
330-8672-021 (tinned) (0,75 - 1,5 mm)
330-8672-019 (tinned) (0,35 - 0,75 mm)
with gold flash plate upon request
Packaging unit 100 pcs.



Note: Press-in Crimp Contacts are not removable after insertion.

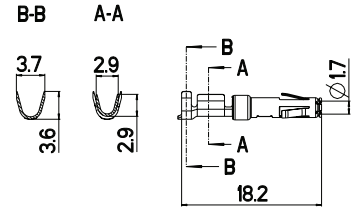
Panel Cut Out Flange for all Flange Receptacles



Socket Crimp-Contacts 1,6 mm Standard Tinned, 3000 contacts per reel

Order No. 192900-0001 (0,5 - 1,5 mm₂)
 *192900-0003 Loose Piece Bulk Pack

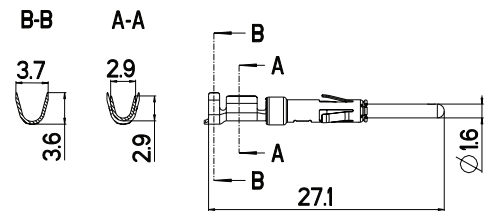
* Crimp Tool - 121586-5237



Pin Crimp-Contacts 1,6 mm Standard Tinned, 3000 contacts per reel

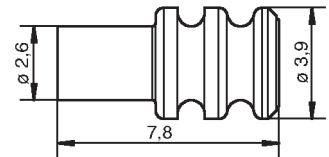
Order No. 192900-0000 * (0,5 - 1,5 mm₂)
 192900-0002 Loose Piece Bulk Pack

* Crimp Tool - 112108-0014



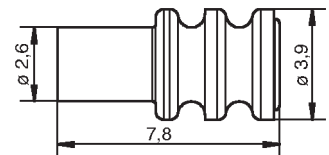
Individual Wire Seals

| Designation | Order No. |
|---|-------------|
| Wire insulation ø 1,4 - 2,0 mm / grey | 121667-0022 |
| Wire insulation ø 1,9 - 2,1 mm / yellow | 121667-0023 |
| Wire insulation ø 1,2 - 1,6 mm / red | 121667-0024 |



Wire Filler

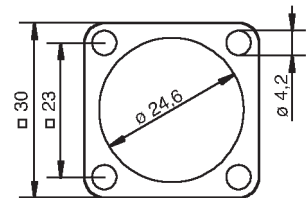
| Designation | Order No. |
|-------------|-------------|
| 10WH3940 | 121667-0025 |



Gasket for all Flange Receptacles

Order No.
 075-8503-000 (-55/125°C)
 075-8503-004 (-30/200°C)

Packaging unit 100 pcs.



Blind Socket for 1 / 2 / 4 / 6 / 7-way

Order No. 120110-0217

Packaging unit 100 pcs.

Note: All cavities closed, mates with 1-7-way APD versions.



Dimensions shown in mm
 Specifications and dimensions subject to change

Sealing Cap for Receptacle

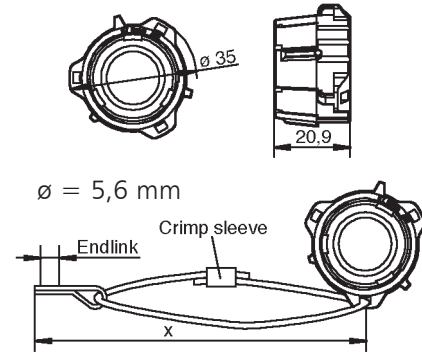
Designation Order No.
 APD-DP 121583-0021

Packaging unit 100 pcs.

APD-DP with rope, end link and eyelet
 X = Total rope length upon request

Order number 120110-0026* X~9cm

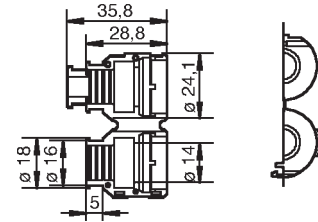
* for other lengths please consult the factory



Straight Endbell for Flex Tube

Order No. 058-8578-100 (ø 8,5 mm)
 058-8578-102 (ø 10,0 mm)

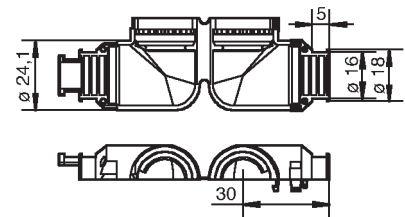
Packaging unit 100 pcs.



90° Endbell for Flex Tube

Order No. 058-8578-101 (ø 8,5 mm)
 058-8578-103 (ø 10,0 mm)
 058-8578-105 (ø 11,0 mm)

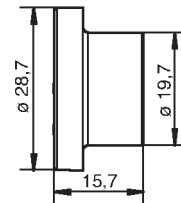
Packaging unit 100 pcs.



Dust Cap for Plug

Order No. 025-8636-005

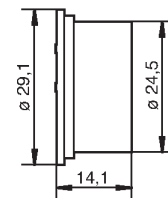
Packaging unit 100 pcs.



Dust Cap for Receptacle

Order No. 025-0480-000

Packaging unit 100 pcs.



Hand Tool for formed (stamped contacts)



| Contact Pin | Contact Socket | Designation | Order No.(to be mentioned on order) |
|-------------|----------------|-------------------|-------------------------------------|
| 192990-0100 | 192990-0110 | CHT-Trident-16-18 | 121586-5237 |
| 192900-0446 | 192900-0450 | CHT-Trident-16-18 | 121586-5237 |
| 192990-0060 | 192990-0070 | CHT-Trident-16-18 | 121586-5237 |
| 192900-0002 | 192990-0003 | CHT-Trident-16-18 | 121586-5237 |

Quick Change Tool for above Crimp Machine: (Mini Applicator)



| Contact / Socket | Designation (to be mentioned on order) | Order No. |
|--|---|-------------|
| 192900-0001 (0,75 - 1,5 mm ²) | WWZ-Mecal-16-18-EVS | 121586-5217 |
| Contact / Socket | Designation (to be mentioned on order) | Order No. |
| 192900-0000 (0,75 - 1,5 mm ²) | WWZ-Mecal-16-18-EVS | 121586-5217 |

Contact Extraction Tool

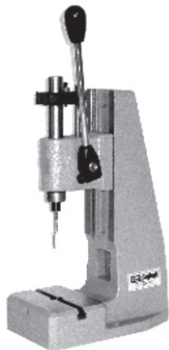


| Description | Order No. |
|---|-------------|
| Trident Extraction Tool Wire Insulation Stripping length: 4,5 mm | 192922-1450 |

Crimp and assembly Tools for press in contacts



| Basic - Hand Crimp Tool | Order No. |
|-------------------------|--------------|
| M22520-1-01 | 995-0001-585 |
| Turret | 120190-0163 |



| Insertion Tool | Order No. |
|--------------------|--------------|
| CIT-APD 16-TIP | 317-8648-008 |
| Hand Lever - Press | Order No. |
| CHPZ-240 | 121586-0081 |
| Ragged Tool | Order No. |
| | 192990-7600 |

Dimensions shown in mm
Specifications and dimensions subject to change

APD Sensor connectors are special 1-4-way versions based on the ISO 15170 4-way layout. They are designed to be directly adapted to sensor housing and typically customized versions. The offering includes several basic versions / variations for pressure sensing and options for flow solder and crimp contacts.



Typical Applications include:

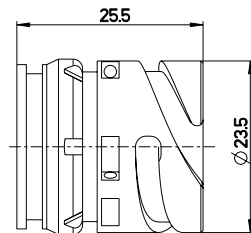
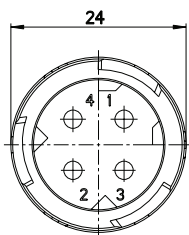
- Pressure Sensing (absolute and relative)
- Temperature Sensing
- Humidity Sensing

Sensor Connectors, Style 1



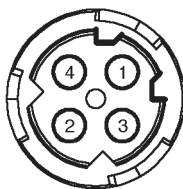
| Order No. | Code | Contact Cavity closed no. | Color |
|--------------|------|---------------------------|------------------|
| 248-8653-031 | 1 | 3 + 4 | black (RAL 9005) |
| 248-8653-053 | 2 | 3 + 4 | grey (RAL 7036) |
| 248-8653-105 | 1 | 4 | black (RAL 9005) |
| 248-8653-106 | 1 | - | black (RAL 9005) |
| 248-8653-134 | 4 | 2 + 4 | blue (RAL 5012) |

Consult factory for customized versions.
Note: Mate with APD 4-way plug.

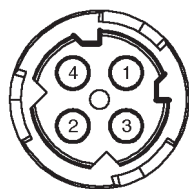


Coding, Basic layouts*

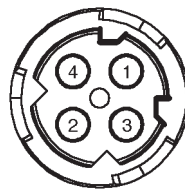
View on Mating Face



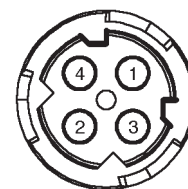
Code 1
black



Code 2
grey



Code 3
green

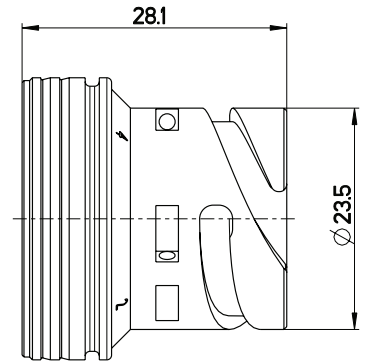
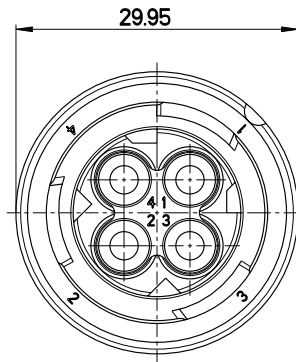


Code 4
blue

Note: The connectors offer both mechanical keying and visual coding by different colors.

* Versions with closed cavities are not shown.

Sensor Connectors, Style 2

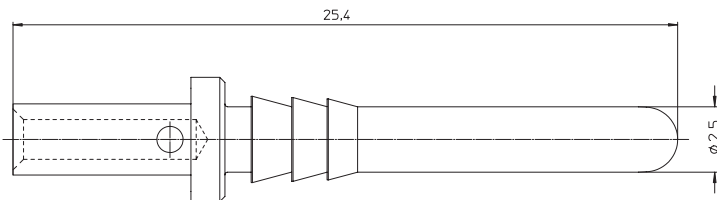


* Pictures and drawings shown are examples.

Consult factory for details. Products can be supplied with:

- Codings 1, 2, 3 and 4
- Partially closed cavities
- Ventilation pin for absolute pressure application

Contacts (machined)



- 2,5 mm contact diameter
- PCB versions available
- Press-in types

| Order Design | Order No. | Crimp Wire Size |
|--------------|-------------|-----------------------------|
| AP120110-13 | 120110-0013 | 0,15 - 0,38 mm ² |
| AP120110-11 | 120110-0011 | 0,5 - 1,0 mm ² |
| AP120110-14 | 120110-0014 | 0,75 - 1,5 mm ² |

APD 19-way is the latest addition to ITT's APD connector range. Based on ISO 15170 it adds additional features to the standard harsh environment capabilities.

Secondary lock, adaptation of market available standard accessories and ease of assembly and disassembly not demanding any special tooling characterize this connector. Moreover, APD 19 is set up around a flexible design platform which allows for customized solutions up to 27 contacts.

Applications for the 19-way include:

- Trucks, Busses, and Tractors
- Motor / Electronic Control Units
- Transmission
- Chassis wire-to-wire and Cabin pass through
- Industrial automation and instrumentation



Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | See derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|--|
| Durability | 50 Mating Cycles |
| Coupling Torque | 3,5 Nm max. |
| Static Load, free connector | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| Dynamic Impact | Free fall with cable (EN 61984 Sec. A9, height 1m) |

Environmental Data (acc. ISO 15170)

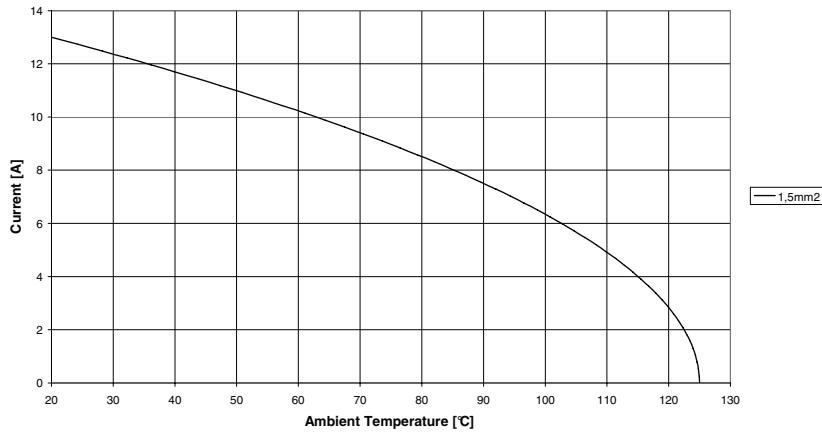
| | |
|----------------------|---|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 + IP 69k (DIN EN 60529) |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 300m/s ² , 3 x 100h, RT and 120°C (ISO 15170-2)* |

Materials List

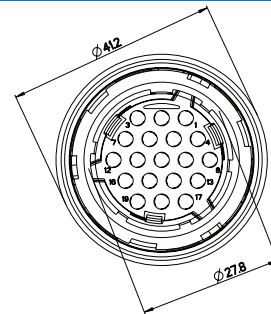
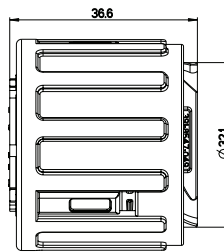
| | |
|---------------|------------------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | FKM |
| Coupling Nut | PA 46 GF |
| Contacts | Copper Alloy, Au, Ag or Sn plated* |

* Further information available upon request.

Derating Curve



Plug, 19-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0119 | APD-1BS19S | 1 | black (RAL 9005) |
| 121583-0121 | APD-2BS19S | 2 | grey (RAL 7036) |
| 121583-0123 | APD-3BS19S | 3 | green (RAL 6029) |
| 121583-0125 | APD-4BS19S | 4 | blue (RAL 5012) |

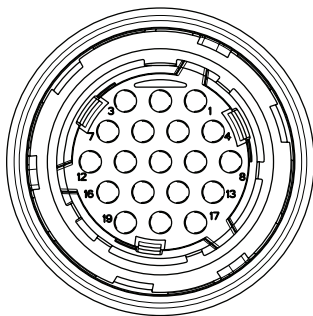
Packaging unit 50 pcs.

Note: Each packaging unit includes one release tool.

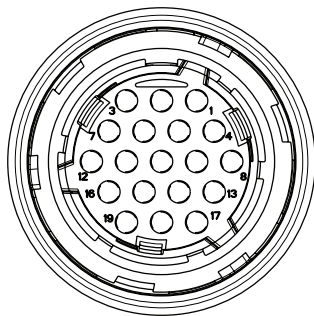
Socket crimp contacts see page 49.
Accessories, see pages 50, 51, and 52.

Coding, 19-way layouts

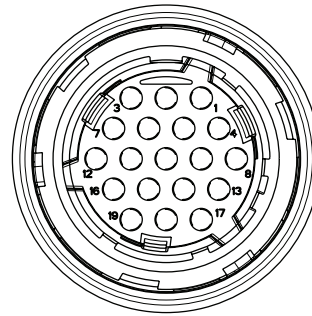
Code 1
black



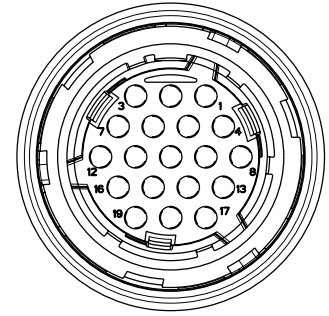
Code 2
grey



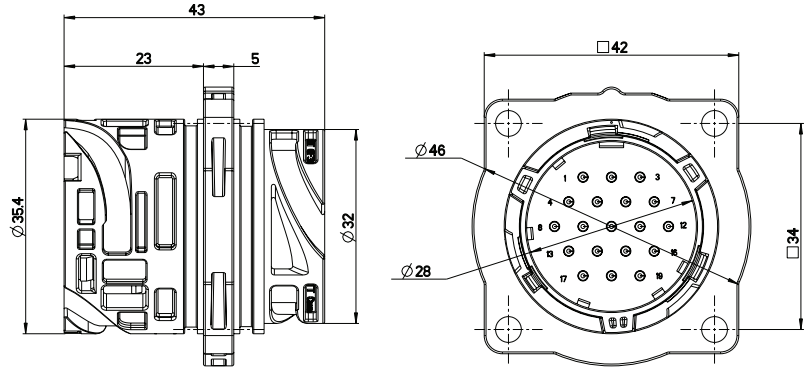
Code 3
green



Code 4
blue



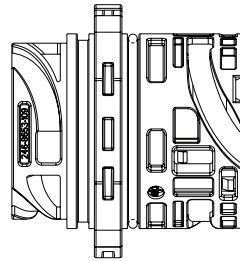
Flange Receptacle, 19-way



| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0120 | APD-1AP19S | 1 | black (RAL 9005) |
| 121583-0122 | APD-2AP19S | 2 | grey (RAL 7036) |
| 121583-0124 | APD-3AP19S | 3 | green (RAL 6029) |
| 121583-0126 | APD-4AP19S | 4 | blue (RAL 5012) |

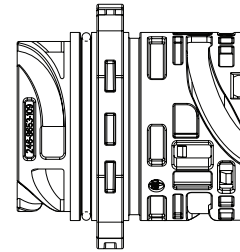
Version with o-ring for rear panel mounting:

| Order No. | Designation | Code | Color |
|-------------|--------------|------|------------------|
| 121583-0127 | APD-1AP19S-R | 1 | black (RAL 9005) |
| 121583-0129 | APD-2AP19S-R | 2 | grey (RAL 7036) |
| 121583-0131 | APD-3AP19S-R | 3 | green (RAL 6029) |
| 121583-0133 | APD-4AP19S-R | 4 | blue (RAL 5012) |



Version with o-ring for front panel mounting:

| Order No. | Designation | Code | Color |
|-------------|--------------|------|------------------|
| 121583-0128 | APD-1AP19S-F | 1 | black (RAL 9005) |
| 121583-0130 | APD-2AP19S-F | 2 | grey (RAL 7036) |
| 121583-0132 | APD-3AP19S-F | 3 | green (RAL 6029) |
| 121583-0134 | APD-4AP19S-F | 4 | blue (RAL 5012) |

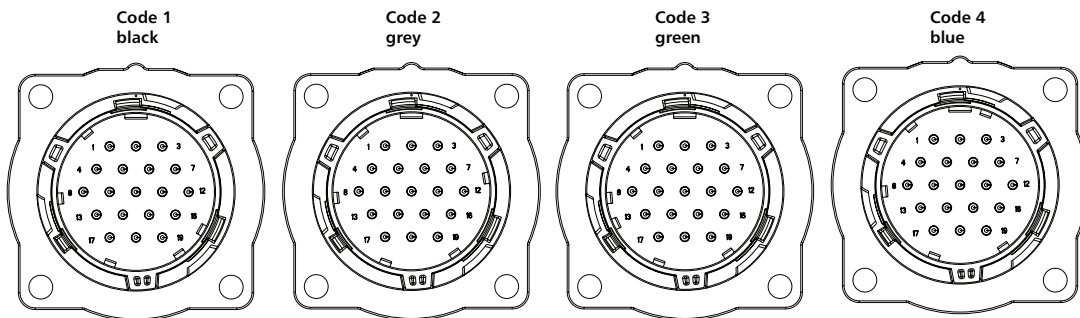


Packaging unit 50 pcs.

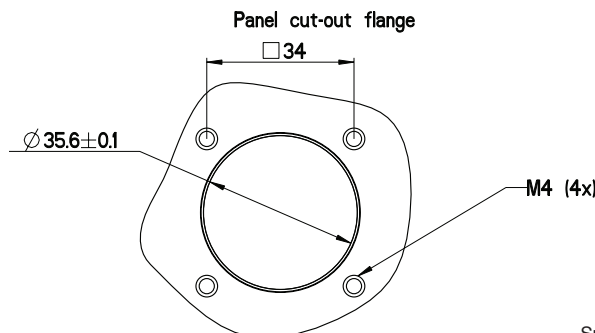
Note: Each packaging unit includes one release tool.

Pin crimp contacts see page 49.
Accessories, see pages 50, 51, and 52.

Coding, 19-way layouts



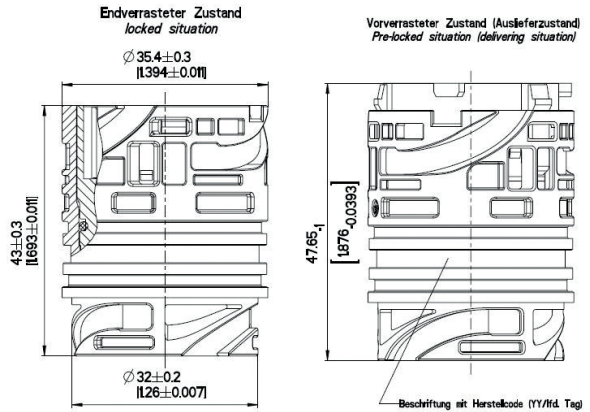
Panel Cut Out



Dimensions shown in mm
Specifications and dimensions subject to change

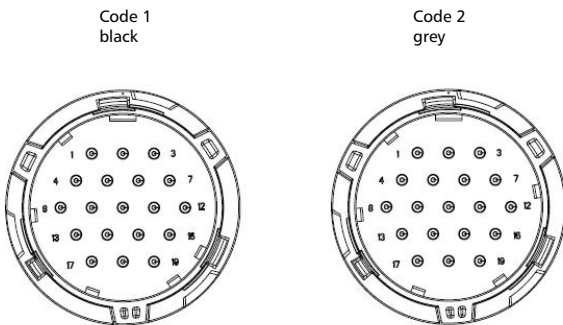
www.ittcannon.com

Wire-to-Wire Receptacle, 19-way

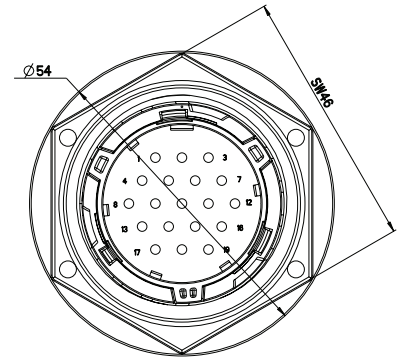
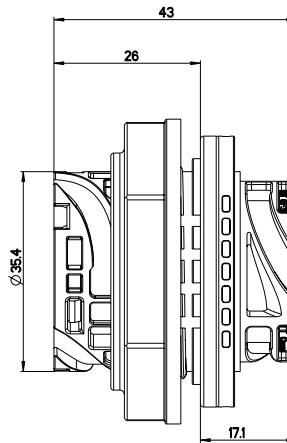
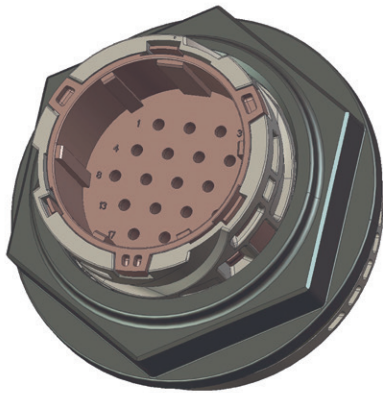


| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0135 | APD-1BP19S | 1 | black (RAL 9005) |
| 121583-0136 | APD-2BP19S | 2 | grey (RAL7036) |

Coding, 19-way layouts



Jam Nut Receptacle, 19-way



| Order No. | Designation | Code | Color |
|-----------------|-------------|------|------------------|
| Consult Factory | APD-1CP19S | 1 | black (RAL 9005) |
| Consult Factory | APD-2CP19S | 2 | grey (RAL 7036) |
| Consult Factory | APD-3CP19S | 3 | green (RAL 6029) |
| Consult Factory | APD-4CP19S | 4 | blue (RAL 5012) |

Packaging unit 50 pcs.

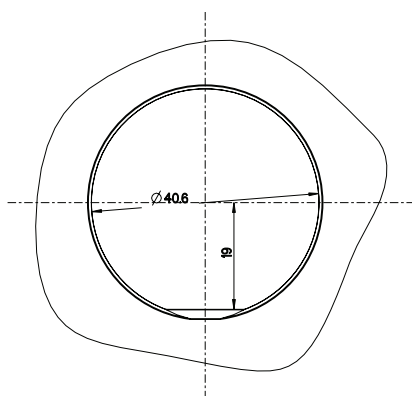
Note: Each packaging unit includes one release tool.

Pin crimp contacts see page 49.
Accessories, see pages 50, 51, and 52.

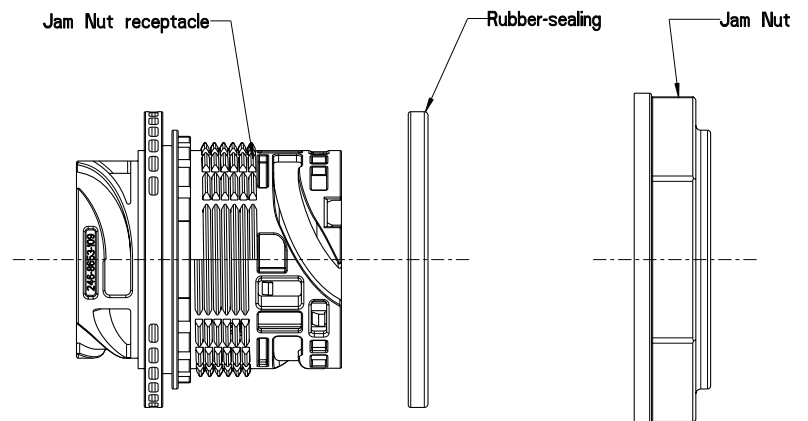
Coding, 19-way layouts

Keying positions: See coding, 19-way layouts plug or flange receptacle.

Panel Cut Out



Piece Parts, Assembly Instructions



Dimensions shown in mm
Specifications and dimensions subject to change

CONTACTS



- Low contact resistance (max. 5mΩ) for maximum signal integrity
- Current carrying capacity: 12A max.
- Machined press-in contacts. (other machined contacts available on request)
- Silver plating, please consult factory

For 19-way

| Contacts (stamped & formed) | Plating | Crimp Range | Reeled (5000 pcs) | | Loose Piece (bags of 100) | |
|-----------------------------|---------------|-----------------------------|-------------------|-------------|---------------------------|-------------|
| | | | Designation | Part number | Designation | Part number |
| Socket contacts | tin | 0,35 - 0,75 mm ² | APK-SA16A07-002 | 121668-0221 | APK-SA16A07-002-B | 121668-0274 |
| | | 0,75 - 1,5 mm ² | APK-SA16A15-002 | 121668-0202 | APK-SA16A15-002-B | 121668-0276 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-SA16G07-002 | 121668-0270 | APK-SA16G07-002-B | 121668-0278 |
| | | 0,75 - 1,5 mm ² | APK-SA16G15-002 | 121668-0272 | APK-SA16G15-002-B | 121668-0280 |
| Pin contacts | tin | 0,35 - 0,75 mm ² | APK-PA16A07-002 | 121668-0252 | APK-PA16A07-002-B | 121668-0275 |
| | | 0,75 - 1,5 mm ² | APK-PA16A15-002 | 121668-0253 | APK-PA16A15-002-B | 121668-0277 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-PA16G07-002 | 121668-0269 | APK-PA16G07-002-B | 121668-0279 |
| | | 0,75 - 1,5 mm ² | APK-PA16G15-002 | 121668-0271 | APK-PA16G15-002-B | 121668-0281 |

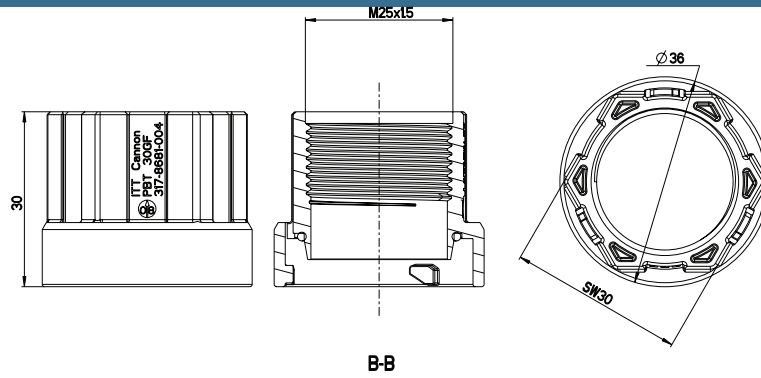
Press-In Contacts

| Contacts (machined) | Plating | Crimp Range | Reeled | | Single piece | |
|---------------------|---------------|---------------------------|-------------|-------------|---------------|-----------------|
| | | | Designation | Part number | Designation | Part number |
| Pin contacts | tin | 0,3 - 0,6 mm ² | - | - | APK-PA16A06-E | Consult Factory |
| | | 0,3 - 0,6 mm ² | - | - | APK-PA16G06-E | Consult Factory |
| | gold (0,8 μm) | 0,5 - 1,0 mm ² | - | - | APK-PA16G10-E | Consult Factory |
| | | 1,0 - 1,5 mm ² | - | - | APK-PA16G15-E | Consult Factory |

Individual Wire Seals / Blind Seals

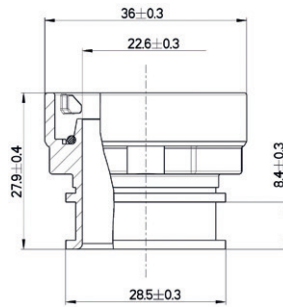
| Description | Insulation Diameter | Color | Part Number |
|---------------------|---------------------|--------|-------------|
| Single Wire Sealing | 1,2 - 1,6 mm | Red | 121667-0024 |
| | 1,4 - 2,0 mm | Grey | 121667-0022 |
| | 1,9 - 2,1 mm | Yellow | 121667-0023 |
| Blind Seal | 1,4 - 2,0 mm | White | 121667-0025 |

Endbell, 19-way



| Order No. | Designation | B-B |
|--------------|---------------------------------|------------------|
| 044-8597-002 | Endbell for APD 19 version only | black (RAL 9005) |

Endbell Adapter, 19-way, for the use of standard 90° / Straight conduit accessories



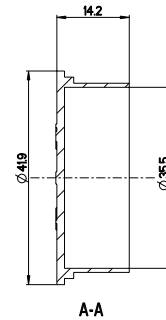
Order Number: 044-8597-004*

* Can be used in combination with PN 980-8672-034. Further adapters available upon request.

Dust Cap for Plug



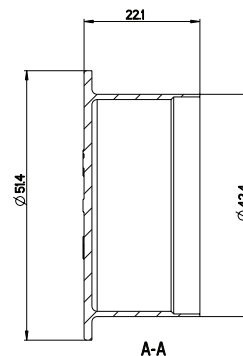
Order Number: 025-8636-053



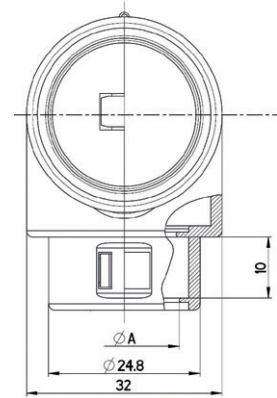
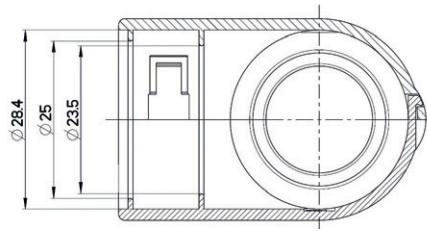
Dust Cap for Receptacle



Order Number: 025-0487-000



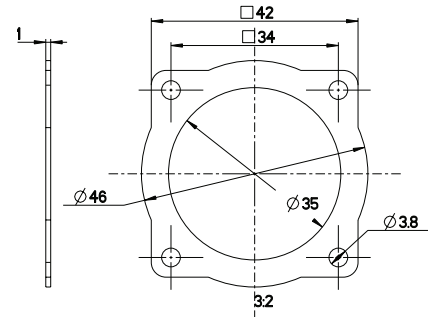
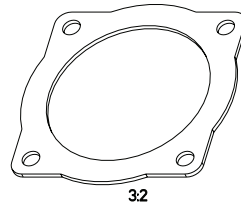
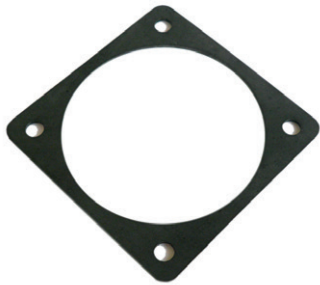
90° Endbell for Flex Tube



| Order No. | Designation | Color | ø A | Nominal Dimension of Conduit |
|--------------|---------------------|-------|-----|------------------------------|
| 980-8672-034 | 90° Endbell Adapter | black | 18 | 17 |
| 980-8672-035 | 90° Endbell Adapter | black | 14 | 13 |

Packaging unit 100 pcs.

Flange Gasket, 19-way



Order Number: 075-8566-003

Conduit Adaptors, 19-way



Order No.
Designation

| | |
|--------------|---------------------|
| 980-8672-015 | 90°, M25, NW23 |
| 980-8672-016 | Straight, M25, NW17 |
| 980-8672-018 | Elbow, M25, NW17 |
| 980-8672-020 | 45°, M25, NW23 |

All versions in black color

Conduit Retainers, 19-way



Order No.
Designation

| | |
|--------------|------|
| 980-8672-021 | NW17 |
|--------------|------|

All versions in black color

Conduit Splitters, 19-way



Order No.
Designation

| | |
|--------------|---------------------|
| 980-8672-017 | Y-Splitter 17X17X23 |
| 980-8672-019 | T-Splitter 17X17X17 |

All versions in black color

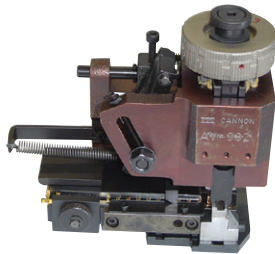
Note: Other versions available, consult factory for more information.

Hand Crimp Tool for Stamped and Formed Contacts



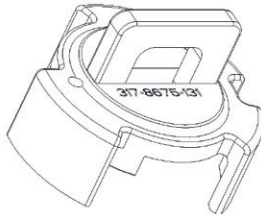
| Contact Die | Hand Tool | Crimp |
|-----------------------------|-------------|-------------|
| 0,35 - 0,75 mm ² | 121586-5156 | 121586-5260 |
| 0,75 - 1,5 mm ² | 121586-5156 | 121586-5197 |

Mini Applicator for Stamped and Formed Contacts



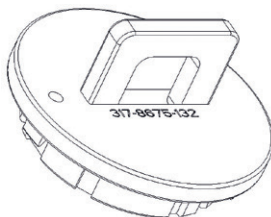
| Contact | Order No. | Designation |
|-----------------------------|-------------|-------------------------|
| 0,35 - 0,75 mm ² | 121586-5131 | WWZ-20-100-APK16-07-002 |
| 0,75 - 1,5 mm ² | 121586-5132 | WWZ-20-100-APK16-15-002 |

Support Tools, 19-way



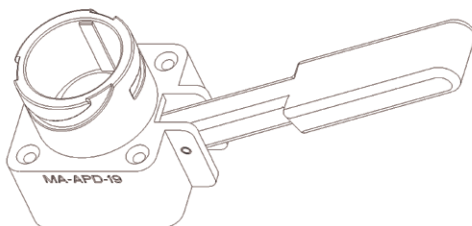
| Designation | Order No.* |
|--|-------------|
| Release tool, secondary lock, plug | 121586-5235 |
| Release tool, secondary lock, receptacle | 121586-5234 |

*Packaging unit of 50 pcs.



| Assembly Adaptor | Order No. |
|------------------|-----------------|
| MA-APD-19 | Consult Factory |

Locking tool for 19-way plug connectors



Hand Crimp Tool for Press-in Contacts



| Basic Hand Crimp Tool No. | Order |
|---------------------------|--------------|
| M225201/1-01 | 995-0001-585 |

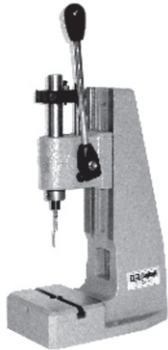
| Locator No. | Order |
|--------------|--------------|
| M225201/1-05 | 995-0001-507 |

Automatic Crimp Tooling for Press-in Contacts



| Designation | Order No. | Description |
|-------------|--------------|----------------|
| WAZ7F-CE | 121586-5067 | Pneumatic Tool |
| M22501/1-05 | 995-0001-507 | Locator |
| BM-2 | 121586-5068 | Bench Mount |
| WA-10 | 121586-5069 | Food Pedal |

Assembly Tooling for Press-in Contacts



| Designation | Order No. | Description |
|---------------|--------------|------------------|
| CHPZ-240 | 121586-0081 | Hand Lever Press |
| CIT-APD16-TIP | 317-8648-008 | Mounting Tip |

APD 37-way is a highly reliable, cost effective multi-pin connector with signal contacts (multi-layout power / signal on demand). It offers wire-to-wire and wire-to-board connection solutions. According to ISO 15170, the connector is dedicated for harsh environmental usage. Various customer specific designs (e.g. different coding) are possible.



Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|--|
| Durability | 20 Mating Cycles |
| Coupling Torque | 4 Nm max. |
| Static Load, free connector | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| Dynamic Impact | Free fall with cable (EN 61984 Sec. A9, height 1m) |

Environmental Data (acc. ISO 15170)

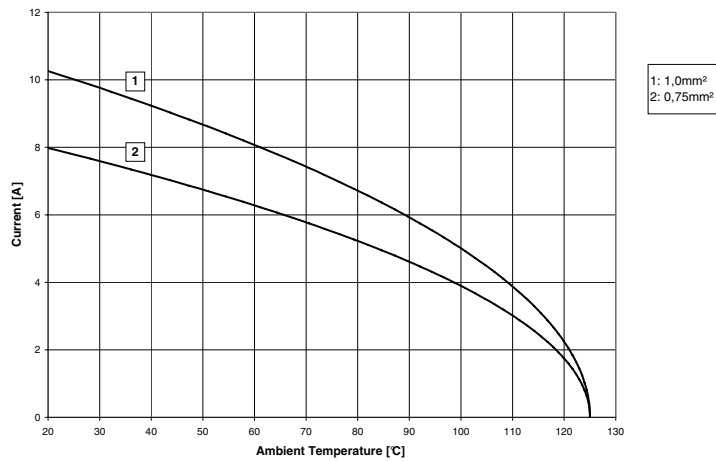
| | |
|----------------------|---|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 + IP 69k (DIN EN 60529) |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Sine, 300m/s ² , 3 x 100h, RT and 120°C (ISO 15170-2)* |

Materials List

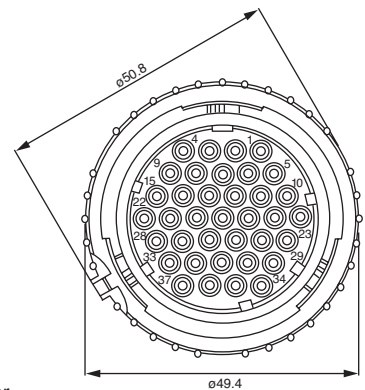
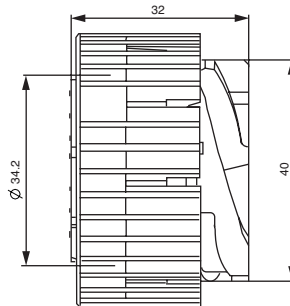
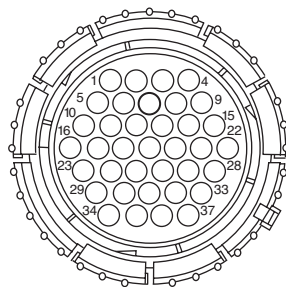
| | |
|---------------|--------------------------------|
| Housing Parts | PA 66 GF |
| Sealing Parts | FKM (alternative FVMQ) |
| Coupling Nut | PA 6 GF |
| Contacts | Copper Alloy, Au or Sn plated* |

*Further information on request

Derating Curve



Plug, 37-way



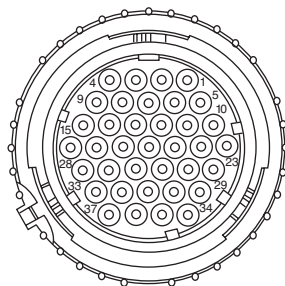
| Order No. | Designation | Code | Color |
|-------------|-------------|------|------------------|
| 121583-0058 | APD-1B537 | 1 | black (RAL 9005) |

Packaging unit 100 pcs.

Socket crimp contacts see page 58.
Accessories, see pages 58 and 59.

Coding 37-way layout

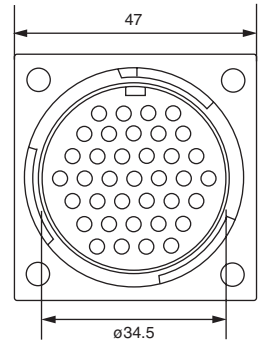
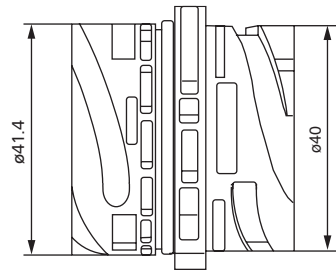
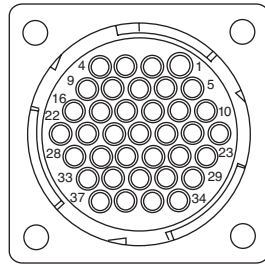
View on Mating Face



Note: Additional coding on demand.



Flange Receptacle, 37-way



| Order No. | Designation | Code | Color | Comment |
|--------------|-------------|------|------------------|----------------|
| 249-8619-017 | APD-1AP37-R | 1 | black (RAL 9005) | wtih O-ring |
| 248-8653-026 | APD-1AP371 | | black (RAL 9005) | without O-ring |

Packaging unit 100 pcs.

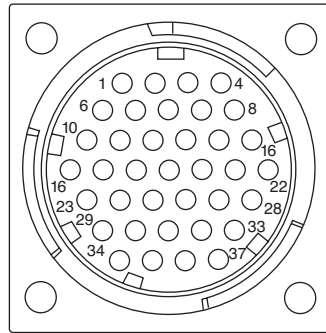
Pin crimp contacts see page 58.

Accessories, see pages 58 and 59.

Note: Requires use of alignment disc.

Coding 37-way layout

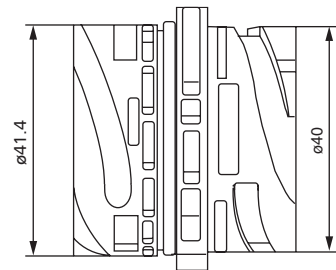
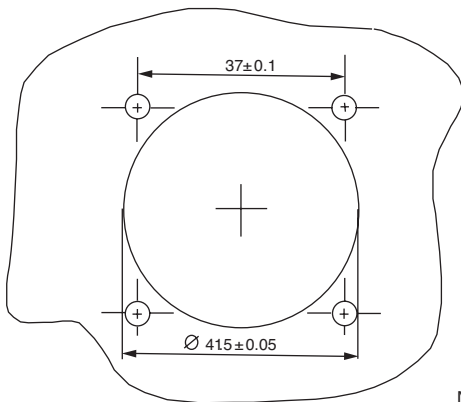
View on Mating Face



Note: Additional coding on demand.

Panel Cut Out

Flange for all Flange Receptacles



Note: Dimension if used as version with radial o-ring seal (249-8619-017).

CONTACTS



- Low contact resistance (max. 5mΩ) for maximum signal integrity
- Current carrying capacity: 12A max.
- Machined press-in contacts. (other machined contacts available on request)
- Silver plating, please consult factory

For APD 37-way

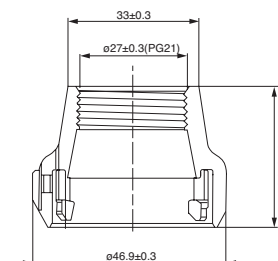
| Contacts (stamped & formed) | Plating | Crimp Range | Reeled 5000 pcs/reel | |
|-------------------------------------|---------------|-----------------------------|----------------------|--------------|
| | | | Designation | Part Number |
| Socket Contacts | tin | 0,35 - 0,75 mm ² | APK-SA16A07-002-C | 121668-0220 |
| | | 0,75 - 1,50 mm ² | APK-SA16A15-002-C | 121668-0222 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-SA16G07-002-C | 121668-0266 |
| | | 0,75 - 1,50 mm ² | APK-SA16G15-002-C | 121668-0268 |
| Pin Contacts | tin | 0,35 - 0,75 mm ² | APK-PA16A07-002-C | 121668-0254 |
| | | 0,75 - 1,50 mm ² | APK-PA16A15-002-C | 121668-0255 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-PA16G07-002-C | 121668-0265 |
| | | 0,75 - 1,50 mm ² | APK-PA16G15-002-C | 121668-0267 |
| Press-In Contacts (machined) | | | | |
| Pin Contacts | tin | 0,30 - 0,60 mm ² | APK-PA16A06-E | 330-8674-020 |
| | gold (0,8 μm) | 0,50 - 1,00 mm ² | APK-PA16G10-E | 330-8674-025 |

Individual Wire and Blind Seals

| Description | Insulation Diameter | Color | Part Number |
|---------------------|---------------------|--------|-------------|
| Single Wire Sealing | 1,2 - 1,6 mm | Red | 121667-0024 |
| | 1,4 - 2,0 mm | Grey | 121667-0022 |
| | 1,9 - 2,1 mm | Yellow | 121667-0023 |
| Blind Seal | | White | 121667-0025 |

Endbell, 37-way

| Order No. | Designation | Color |
|--------------|-------------------------------------|------------------|
| 044-8597-000 | Endbell for APD 37-way version only | black (RAL 9005) |

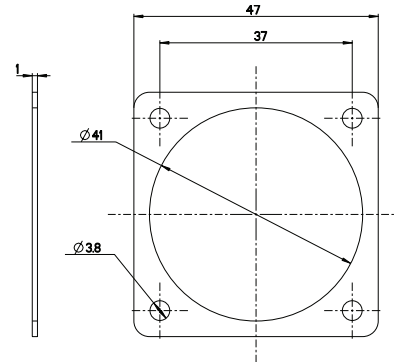


Dimensions shown in mm
Specifications and dimensions subject to change

Flange Gasket



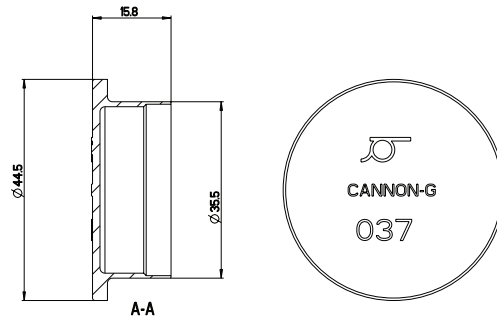
Order Number: 075-8566-004



Dust Cap for Plug



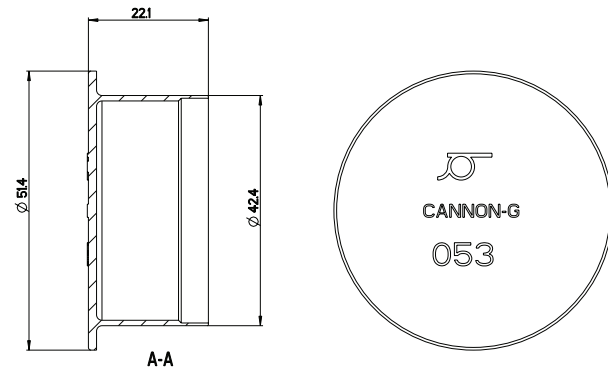
Order Number: 025-8636-037



Dust Cap for Receptacle



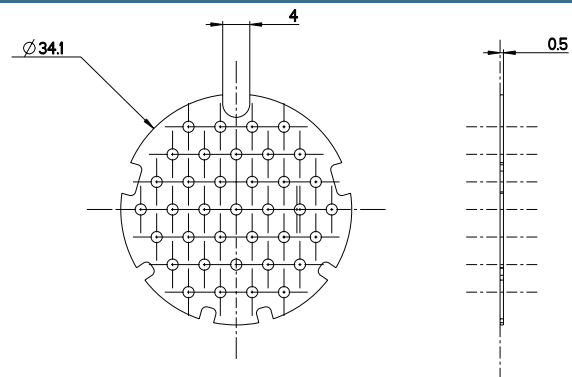
Order Number: 025-8636-053



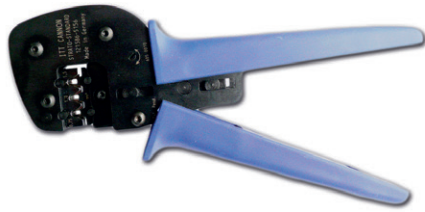
Alignment Disc 37-way

Alignment disc for 37-way Flange Receptacle

Order Number: 052-8509-004

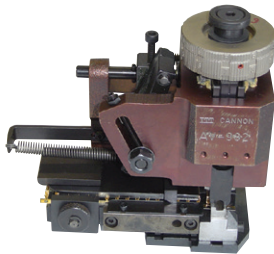


Hand Crimp Tool for Stamped and Formed Contacts



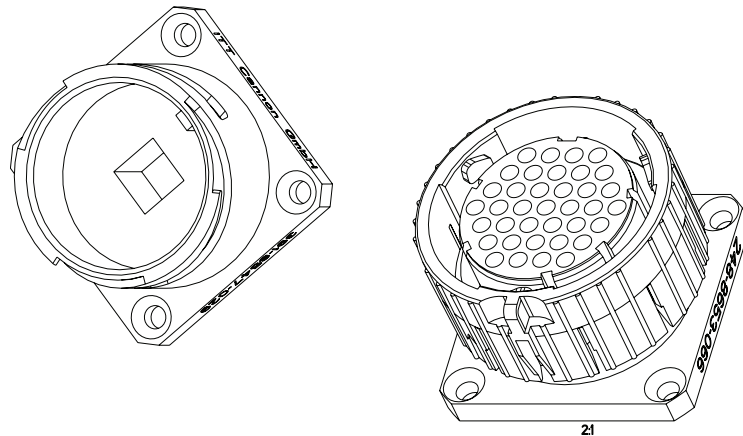
| Contact | Hand Tool Order No. | Crimp Die |
|-----------------------------|------------------------|-------------|
| 0,35 - 0,75 mm ² | 121586-5156 | 121586-5260 |
| 0,75 - 1,5 mm ² | 121586-5156 | 121586-5197 |

Mini Applicator for Stamped and Formed Contacts



| Contact | Order No. | Designation |
|-----------------------------|-------------|-------------------------|
| 0,35 - 0,75 mm ² | 121586-5131 | WWZ-20-100-APK16-07-002 |
| 0,75 - 1,5 mm ² | 121586-5132 | WWZ-20-100-APK16-15-002 |

Support Tools, 37-way



| Designation | Order No. |
|---|--------------|
| Assembly Adaptor for plug MA-APD-37-R | 391-8547-029 |
| Assembly Adaptor for receptacle MA-APD-37-P | 248-8653-066 |
| Replacement Nut for MA-APD-37P | 217-8516-007 |
| Contact Insertion Tool CIT-APK-16-15-C | 121586-5200 |
| Contact Extraction Tool CET-APK-16-C | 121586-5195 |

Hand Crimp Tool for Press-in Contacts



| Basic Hand Crimp Tool No. | Order |
|---------------------------|--------------|
| M225201/1-01 | 995-0001-585 |

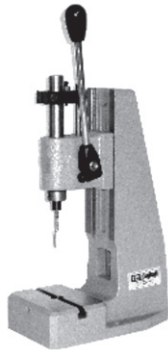
| Locator No. | Order |
|--------------|--------------|
| M225201/1-05 | 995-0001-507 |

Automatic Crimp Tooling for Press-in Contacts



| Designation | Order No. | Description |
|-------------|--------------|----------------|
| WAZ7F-CE | 121586-5067 | Pneumatic Tool |
| M22501/1-05 | 995-0001-507 | Locator |
| BM-2 | 121586-5068 | Bench Mount |
| WA-10 | 121586-5069 | Food Pedal |

Assembly Tooling for Press-in Contacts



| Designation | Order No. | Description |
|---------------|--------------|------------------|
| CHPZ-240 | 121586-0081 | Hand Lever Press |
| CIT-APD16-TIP | 317-8648-008 | Mounting Tip |



The APD 51-way connector offers the same features as the 37-way solution. Furthermore it is available in 2 versions, standard and secondary lock for added security. The connector features up to 8 mechanical key and visual color coding options for better mating identification and to avoid mis-mating.

Standard Code 1: Green
 Code 2: Yellow
 Code 3: Brown
 Code 4: Purple

For other coding consult factory

Electrical Data

| | |
|-----------------------|----------------------|
| Operating Voltage | 48 VDC* |
| Operating Current | see derating curve |
| Contact Resistance | 5 mΩ max. |
| Voltage Proof | 1000 VAC, 60 seconds |
| Insulation Resistance | 10 MΩ min. |

Mechanical Data

| | |
|-----------------------------|---|
| Durability | 40 Mating Cycles |
| Coupling Torque | 4,5 Nm max. |
| Static Load, free connector | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| Dynamic Impact | 2 J (40mm- ball- drop- test, height 800mm) |

Environmental Data (acc. ISO 15170)

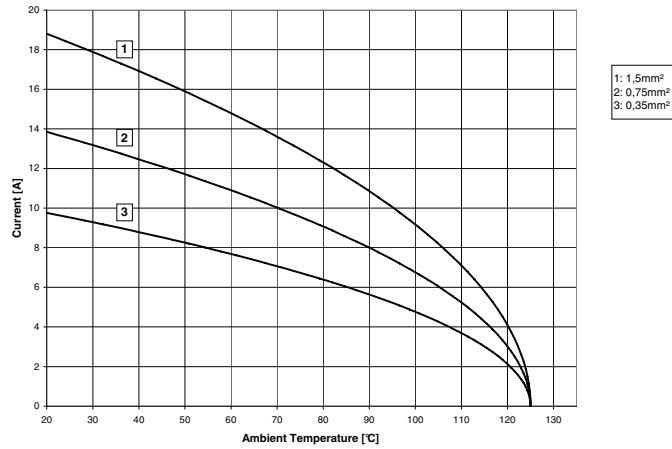
| | |
|----------------------|--|
| Temperature Range | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| Humidity Range | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| Sealing | IP 67 + IP 69k (DIN EN 60529) |
| Salt Spray | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| Industrial Climate | SO ₂ , 0,67 % (ISO 15170-2, Sec. 6.3) |
| Fluid Compatibility | Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)* |
| Vibration Resistance | Random, 0,2(m/s ²)/Hz, 3 x 24h, RT |

Materials List

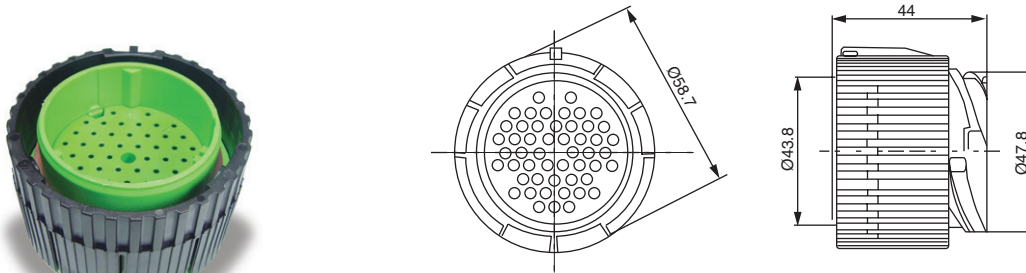
| | |
|---------------|--------------------------------|
| Housing Parts | PBT GF |
| Sealing Parts | FKM |
| Coupling Nut | PA 6 GF |
| Contacts | Copper Alloy, Au or Sn plated* |

*Further information on request

Derating Curve



Plug, 51-way, Standard Version



| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0032 | APD-1BP51 | 1 | green (RAL 6018) |
| 121583-0033 | APD-2BP51 | 2 | yellow (RAL 1018) |
| 121583-0030 | APD-3BP51 | 3 | brown (RAL 3009) |
| 121583-0031 | APD-4BP51 | 4 | purple (RAL 4001) |

Packaging unit 100 pcs.

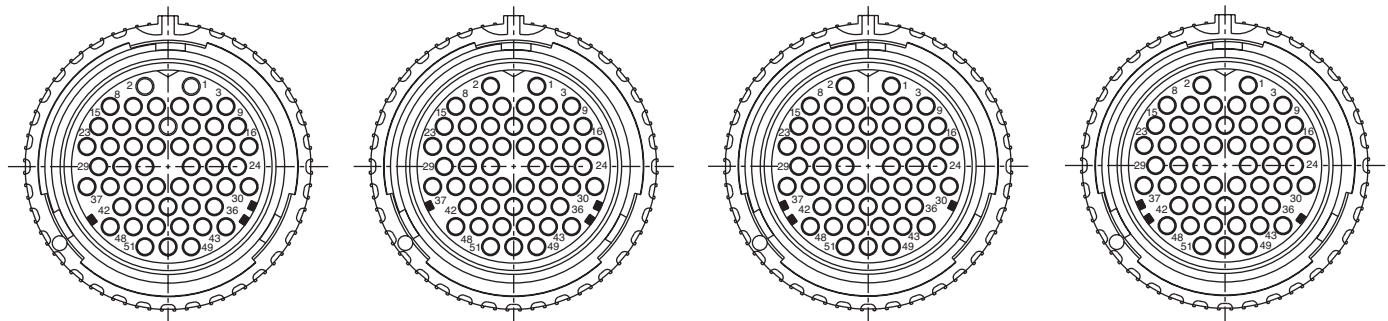
Pin crimp contacts see page 69.

Accessories, see page 70.

Note: Standard version requires use of alignment disc.

Coding 51-way layout

View on Mating Face



Code 1
green

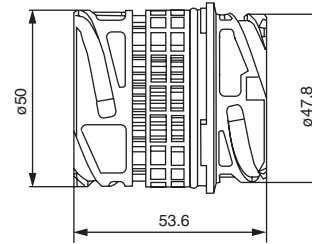
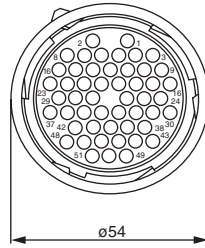
Code 2
yellow

Code 3
brown

Code 4
purple

Note: The connectors offer both mechanical keying and visual coding by different colors.

Snap-In Receptacle, 51-way, Standard Version



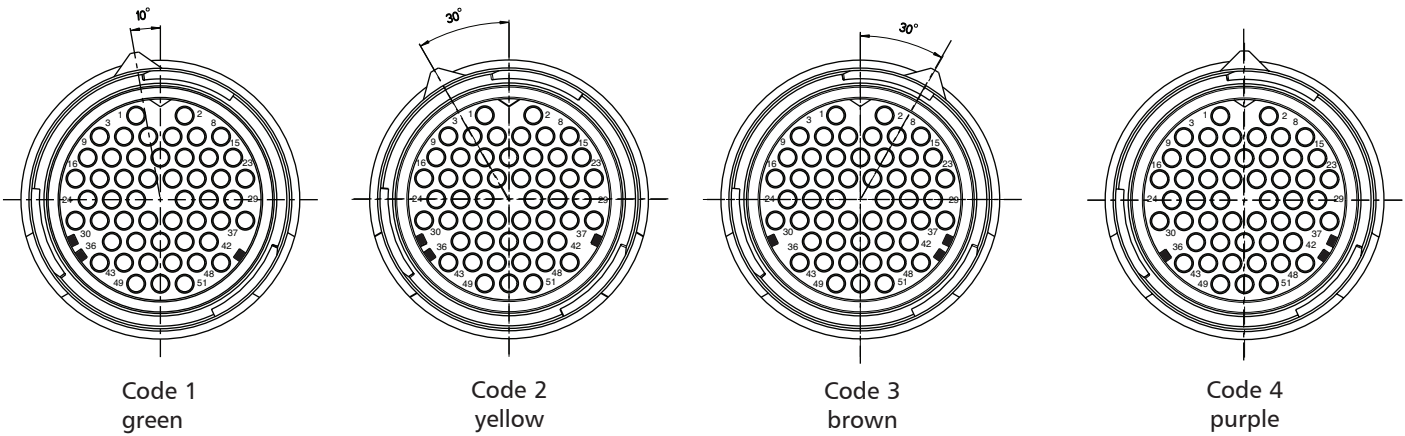
| Order No. | Designation | Code | Color |
|--------------|-------------|------|-------------------|
| 249-8619-003 | APD-1SS51 | 1 | green (RAL 6018) |
| 249-8619-004 | APD-2SS51 | 2 | yellow (RAL 1018) |
| 249-8619-001 | APD-3SS51 | 3 | brown (RAL 3009) |
| 249-8619-002 | APD-4SS51 | 4 | purple (RAL 4001) |

Packaging unit 100 pcs.

Socket crimp contacts see page 69.
Accessories, see page 70.

Coding 51-way layout

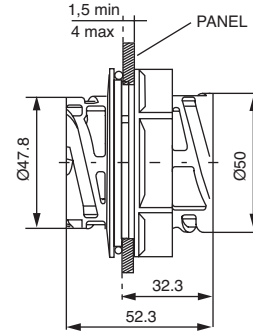
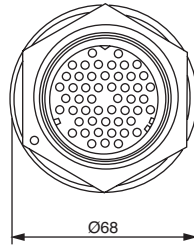
View on Mating Face



Note: The connectors offer both mechanical keying and visual coding by different colors.

3D data showing snap-in design available upon request.

Jam Nut Receptacle, 51-way, Standard Version



| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0081 | APD-1CS51 | 1 | green (RAL 6018) |
| 121583-0082 | APD-2CS51 | 2 | yellow (RAL 1018) |
| 121583-0079 | APD-3CS51 | 3 | brown (RAL 3009) |
| 121583-0080 | APD-4CS51 | 4 | purple (RAL 4001) |

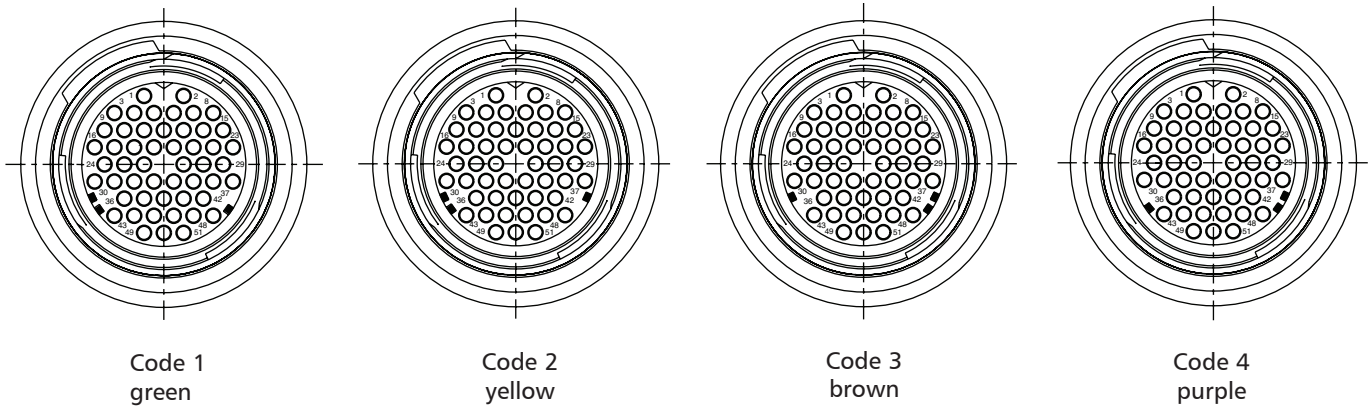
Packaging unit 100 pcs.

Socket crimp contacts see page 69.

Accessories, see page 70.

Coding 51-way layout

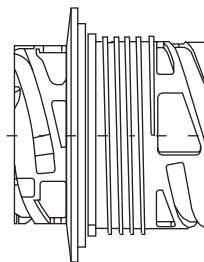
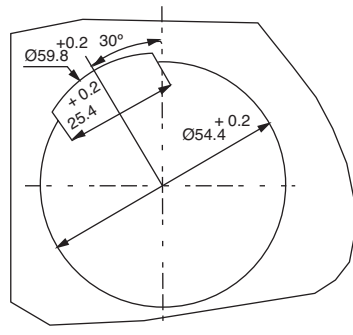
View on Mating Face



Note: The connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out

Piece Parts / Assembly Instruction



Wall Thickness
Standard: min. 1,5 / max. 4,0 mm

Housing

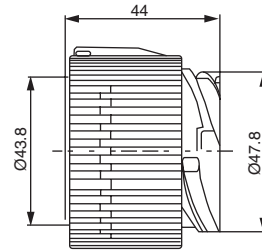
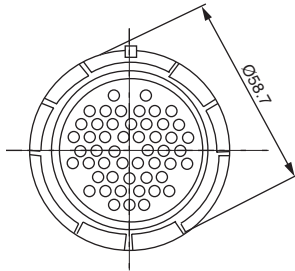
O-Ring

Jam Nut

Dimensions shown in mm
Specifications and dimensions subject to change



Plug, 51-way, Secondary Lock Version



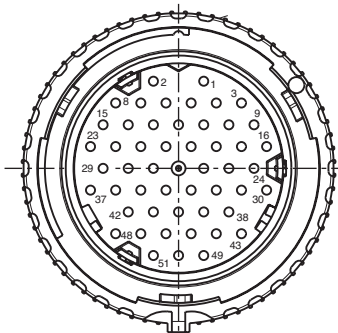
| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0187 | APD-1BP51SN | 1 | green (RAL 6018) |
| 121583-0188 | APD-2BP51SN | 2 | yellow (RAL 1018) |
| 121583-0189 | APD-3BP51SN | 3 | brown (RAL 3009) |
| 121583-0190 | APD-4BP51SN | 4 | purple (RAL 4001) |

Packaging unit 100 pcs.

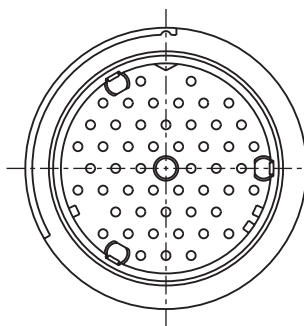
Pin crimp contacts see page 69.
Accessories, see page 70.

Coding 51-way layout

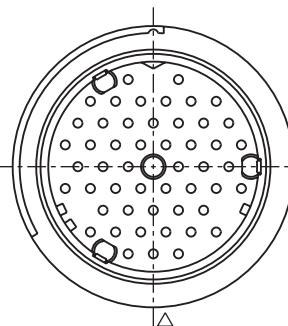
View on Mating Face



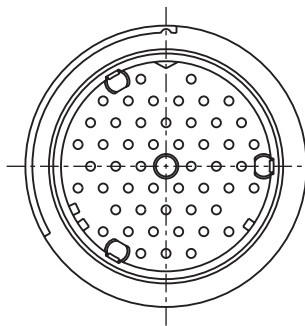
Code 1
green



Code 2
yellow



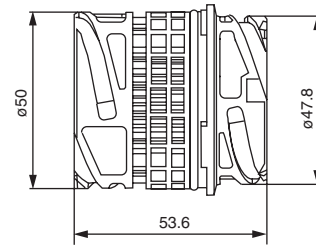
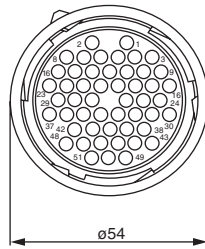
Code 3
brown



Code 4
purple

Note: The connectors offer both mechanical keying and visual coding by different colors.

Snap-In Receptacle, 51-way, Secondary Lock Version



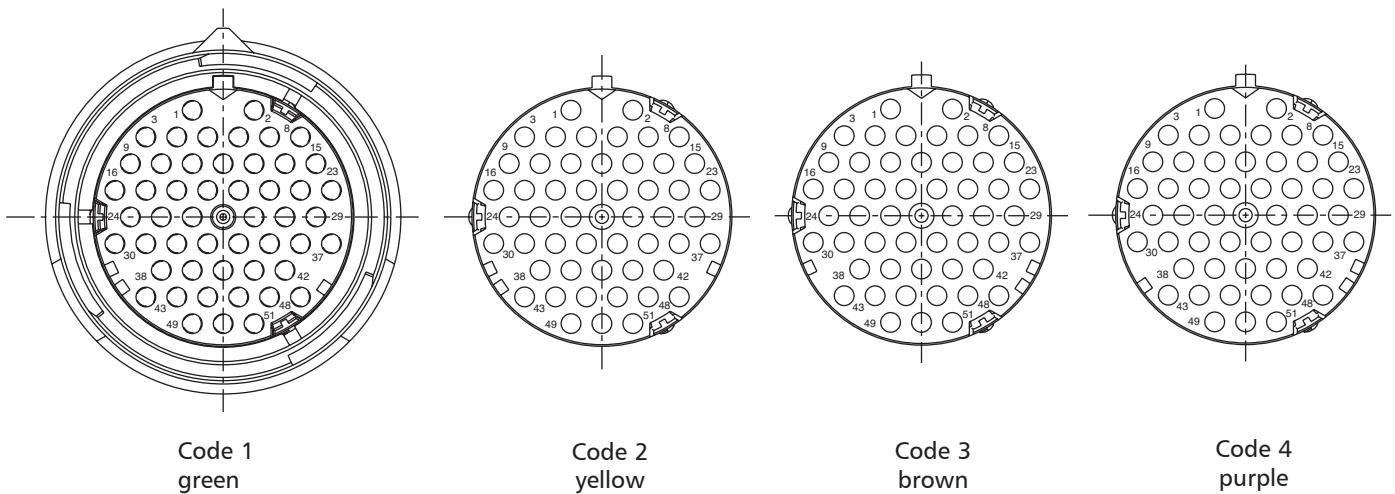
| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0091 | APD-1SS51S | 1 | green (RAL 6018) |
| 121583-0092 | APD-2SS51S | 2 | yellow (RAL 1018) |
| 121583-0093 | APD-3SS51S | 3 | brown (RAL 3009) |
| 121583-0094 | APD-4SS51S | 4 | purple (RAL 4001) |

Packaging unit 100 pcs.

Socket crimp contacts see page 69.
Accessories, see page 70.

Coding 51-way layout

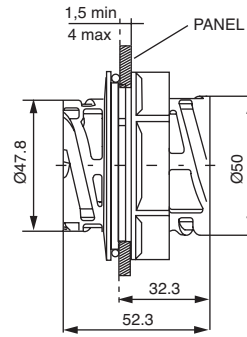
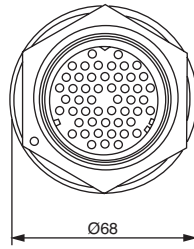
View on Mating Face



Note: The connectors offer both mechanical keying and visual coding by different colors.

Snap-In dimension on demand 3-D-image available.

Jam Nut Receptacle, 51-way, Secondary Lock Version

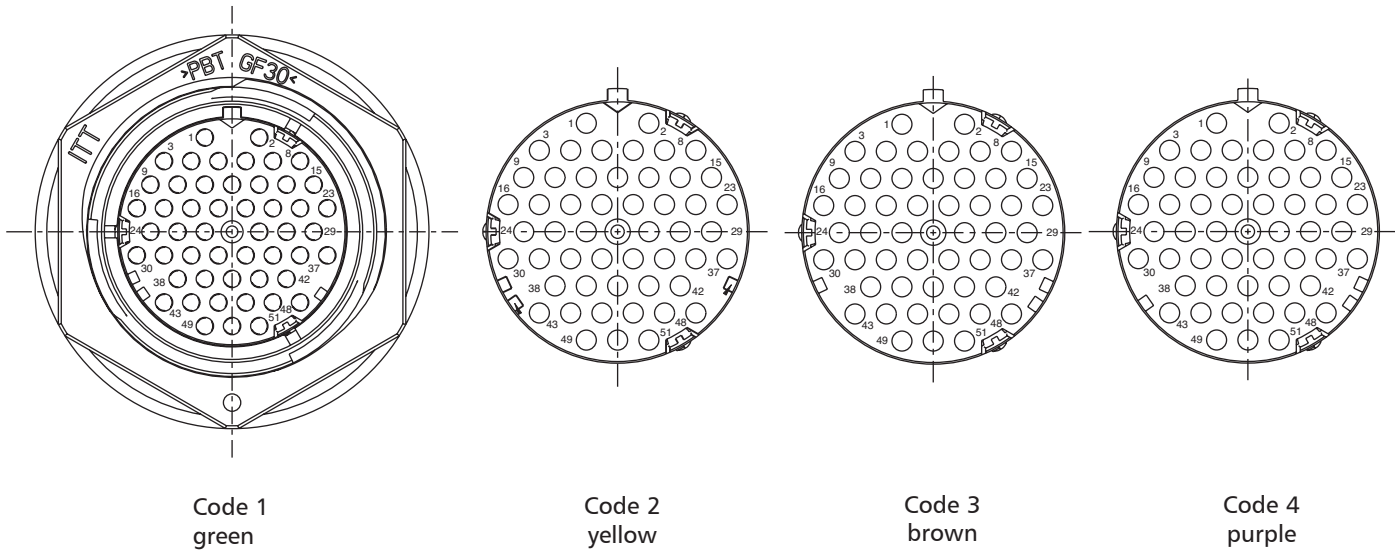


| Order No. | Designation | Code | Color |
|-------------|-------------|------|-------------------|
| 121583-0095 | APD-1CS51S | 1 | green (RAL 6018) |
| 121583-0096 | APD-2CS51S | 2 | yellow (RAL 1018) |
| 121583-0097 | APD-3CS51S | 3 | brown (RAL 3009) |
| 121583-0098 | APD-4CS51S | 4 | purple (RAL 4001) |

Packaging unit 100 pcs.
 Socket crimp contacts see page 69.
 Accessories, see page 70.

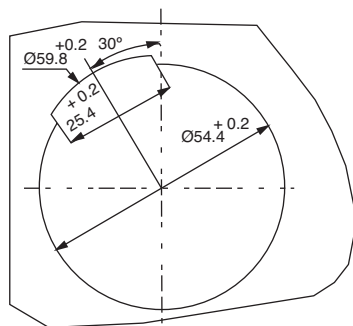
Coding 51-way layout

View on Mating Face

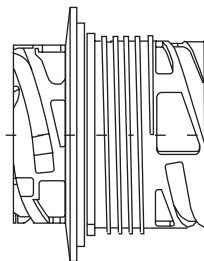


Note: The connectors offer both mechanical keying and visual coding by different colors.

Panel Cut Out Piece Parts / Assembly Instruction



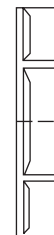
Wall Thickness
 Standard: min. 1,5 / max. 4,0 mm



Housing



O-Ring



Jam Nut



Dimensions shown in mm
 Specifications and dimensions subject to change

CONTACTS



- Low contact resistance (max. 5mΩ) for maximum signal integrity
- Current carrying capacity: 12A max.
- Machined press-in contacts. (other machined contacts available on request)
- Silver plating, please consult factory

For 51-way Standard Version

| Contacts (stamped & formed) | Plating | Crimp Range | Reeled (5000 pcs) | | Loose Piece (bags of 100) | |
|-----------------------------|---------------|-----------------------------|-------------------|-------------|---------------------------|-------------|
| | | | Designation | Part number | Designation | Part number |
| Socket contacts | tin | 0,35 - 0,75 mm ² | APK-SA16A07-002-C | 121668-0220 | - | - |
| | | 0,75 - 1,5 mm ² | APK-SA16A15-002-C | 121668-0222 | - | - |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-SA16G07-002-C | 121668-0266 | - | - |
| | | 0,75 - 1,5 mm ² | APK-SA16G15-002-C | 121668-0268 | - | - |
| Pin contacts | tin | 0,35 - 0,75 mm ² | APK-PA16A07-002-C | 121668-0254 | - | - |
| | | 0,75 - 1,5 mm ² | APK-PA16A15-002-C | 121668-0255 | - | - |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-PA16G07-002-C | 121668-0265 | - | - |
| | | 0,75 - 1,5 mm ² | APK-PA16G15-002-C | 121668-0267 | - | - |

For 51-way Secondary Lock Version

| Contacts (stamped & formed) | Plating | Crimp Range | Reeled (5000 pcs) | | Loose Piece (bags of 100) | |
|-----------------------------|---------------|-----------------------------|-------------------|-------------|---------------------------|-------------|
| | | | Designation | Part number | Designation | Part number |
| Socket contacts | tin | 0,35 - 0,75 mm ² | APK-SA16A07-002 | 121668-0221 | APK-SA16A07-002-B | 121668-0274 |
| | | 0,75 - 1,5 mm ² | APK-SA16A15-002 | 121668-0202 | APK-SA16A15-002-B | 121668-0276 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-SA16G07-002 | 121668-0270 | APK-SA16G07-002-B | 121668-0278 |
| | | 0,75 - 1,5 mm ² | APK-SA16G15-002 | 121668-0272 | APK-SA16G15-002-B | 121668-0280 |
| Pin contacts | tin | 0,35 - 0,75 mm ² | APK-PA16A07-002 | 121668-0252 | APK-PA16A07-002-B | 121668-0275 |
| | | 0,75 - 1,5 mm ² | APK-PA16A15-002 | 121668-0253 | APK-PA16A15-002-B | 121668-0277 |
| | gold (0,8 μm) | 0,35 - 0,75 mm ² | APK-PA16G07-002 | 121668-0269 | APK-PA16G07-002-B | 121668-0279 |
| | | 0,75 - 1,5 mm ² | APK-PA16G15-002 | 121668-0271 | APK-PA16G15-002-B | 121668-0281 |

Press-In Contacts (Standard Version)

| Contacts (machined) | Plating | Crimp Range | Reeled | | Single piece | |
|---------------------|---------------|---------------------------|-------------|-------------|---------------|--------------|
| | | | Designation | Part number | Designation | Part number |
| Pin contacts | tin | 0,3 - 0,6 mm ² | - | - | APK-PA16A06-E | 330-8674-020 |
| | | 0,3 - 0,6 mm ² | - | - | APK-PA16G06-E | 330-8674-026 |
| | gold (0,8 μm) | 0,5 - 1,0 mm ² | - | - | APK-PA16G10-E | 330-8674-025 |
| | | 1,0 - 1,5 mm ² | - | - | APK-PA16G15-E | 330-8674-024 |

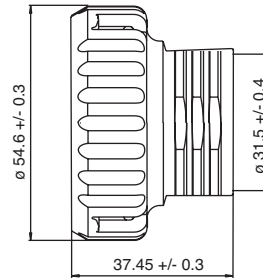
Individual Wire Seals / Blind Seals

| Description | Insulation Diameter | Color | Part Number |
|---------------------|---------------------|--------|-------------|
| Single Wire Sealing | 1,2 - 1,6 mm | Red | 121667-0024 |
| | 1,4 - 2,0 mm | Grey | 121667-0022 |
| | 1,9 - 2,1 mm | Yellow | 121667-0023 |
| Blind Seal | 1,4 - 2,0 mm | White | 121667-0025 |

Dimensions shown in mm
 Specifications and dimensions subject to change



Endbell, 51-way

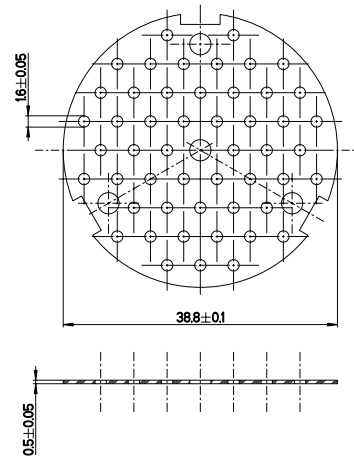


| Order No. | Designation | Color |
|-------------|-------------------------------------|------------------|
| 120110-0075 | Endbell for APD 51-way version only | black (RAL 9005) |

Packaging unit 100 pcs.

Alignment Disc, 51-way

| Order No. | Designation |
|--------------|---|
| 052-8509-003 | Alignment disc for 51-way standard version only (plug only) |



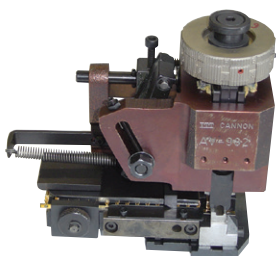
Note: Not required for secondary lock version.

Hand Crimp Tool for Stamped and Formed Contacts



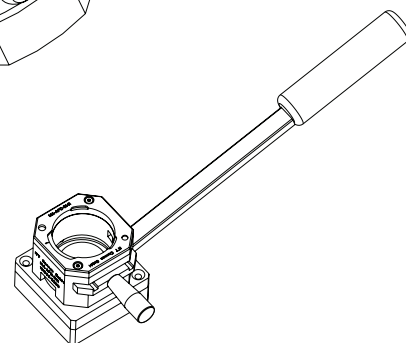
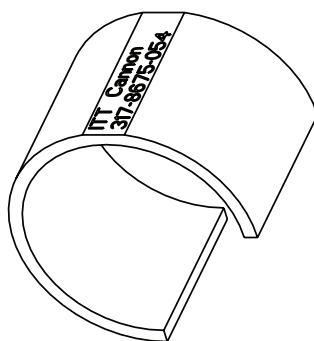
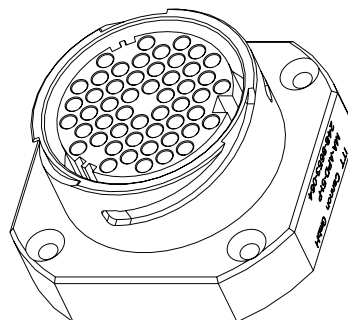
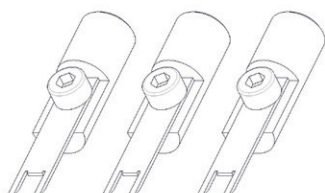
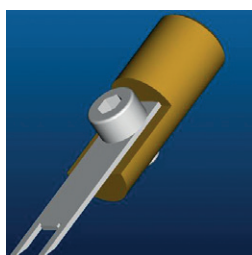
| Contact Locator | Hand Tool Order No. | |
|-----------------------------|---------------------|-------------|
| 0,35 - 0,75 mm ² | 121586-5156 | 121586-5260 |
| 0,75 - 1,5 mm ² | 121586-5156 | 121586-5197 |

Mini Applications for Stamped and Formed Contacts



| Contact | Order No. | Designation |
|-----------------------------|-------------|-------------------------|
| 0,35 - 0,75 mm ² | 121586-5131 | WWZ-20-100-APK16-07-002 |
| 0,75 - 1,5 mm ² | 121586-5132 | WWZ-20-100-APK16-15-002 |

Support Tools, 51-way



| Designation | Order No. |
|--|--------------|
| Assembly Adaptor for plug MA-APD-51-P | 248-8653-064 |
| Assembly Adaptor for receptacle MA-APD-51-R | 249-8619-011 |
| Replacement Nut for MA-APD-51-R | 217-8516-005 |
| Assembly adaptor for plug MA-APD-51-P-SEC-LOCK | 121586-5202 |
| Assembly adaptor for receptacle MA-APD-51-R-SEC-LOCK | 121586-5203 |
| Assembly adaptor for Jam nut MA-APD-51-FL-SEC-LOCK | 121586-5206 |
| Unlocking Device | 317-8675-054 |
| Contact Insertion Tool CIT APK-16-15-C | 121586-5200 |
| Contact Extraction Tool CET-APK-16-C | 121586-5195 |
| Secondary Lock Set CET-ADP-51 | 121586-5259* |

*For plug only

Dimensions shown in mm
 Specifications and dimensions subject to change

Hand Crimp Tool for Press-in Contacts



| | |
|------------------------------|--------------|
| Basic Hand Crimp Tool No. | Order |
| M225201/1-01 | 995-0001-585 |

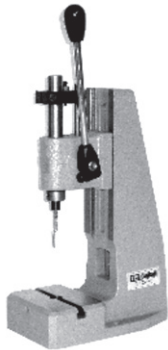
| | |
|----------------|--------------|
| Locator No. | Order |
| M225201/1-05 | 995-0001-507 |

Automatic Crimp Tooling for Press-in Contacts



| Designation | Order No. | Description |
|-------------|--------------|----------------|
| WA27-7 | 121586-5067 | Pneumatic Tool |
| M22501/1-05 | 995-0001-507 | Locator |
| BM-2 | 121586-5068 | Bench Mount |
| WA-10 | 121586-5069 | Food Pedal |

Assembly Tooling for Press-in Contacts



| Designation | Order No. | Description |
|---------------|--------------|------------------|
| CHPZ-240 | 121586-0081 | Hand Lever Press |
| CIT-APD16-TIP | 317-8648-008 | Mounting Tip |

The demand within the transportation & industrial markets for direct PC board connections is increasing. Solutions demanding space savings, reduction of assembly costs or standardized assembly methods are just a selection of reasons driving this trend. PCB type connectors complement the offering of crimp and solder cup type connections within the APD product range.

APD connectors with PCB contacts can be offered for most of our products shown in this catalog. This chapter will provide a first impression of technical features and benefits as well as examples of PCB connector solution.



Technical Specifications

| | |
|------------------|---|
| Mechanical Data: | All PCB connectors are derived from standard APD lines and feature similar properties |
| Electrical Data: | Depends on exact design of contacts and requirements of solution, generally similar to respective APD standard product |
| Environmental: | IP67 / IP69K with improved long term stability against fluids e.g. motor oil due to press-in assembly into connector. Resistance against fluids according to ISO 15170 |

Technical Specifications

- PCB contacts are useable in all non secondary lock versions
- Increased long term stability – sealing against e.g. motor oil
- Individual definition of contact length – adaptation to application
- Pre-assembled versions can be delivered - avoids additional harnessing work
- Useable for printed flex board applications
- Increases reliability (no harness errors)
- Avoids additional harness costs and reduces complexity of total manufacturing process

Cross Reference AWG Size / metric size (mm²)

| AWG | mm ² | AWG | mm ² | AWG | mm ² |
|-----|-----------------|-----|-----------------|-----|-----------------|
| 6/0 | 170,3 | 10 | 5,27 | 25 | 0,163 |
| 5/0 | 135,1 | 11 | 4,15 | 26 | 0,128 |
| 4/0 | 107,2 | 12 | 3,31 | 27 | 0,102 |
| 3/0 | 85,0 | 13 | 2,63 | 28 | 0,0804 |
| 2/0 | 67,5 | 14 | 2,08 | 29 | 0,0646 |
| 0 | 53,4 | 15 | 1,65 | 30 | 0,0503 |
| 1 | 42,4 | 16 | 1,31 | 31 | 0,0400 |
| 2 | 33,6 | 17 | 1,04 | 32 | 0,0320 |
| 3 | 26,7 | 18 | 0,823 | 33 | 0,0252 |
| 4 | 21,2 | 19 | 0,653 | 34 | 0,0200 |
| 5 | 16,8 | 20 | 0,519 | 35 | 0,0161 |
| 6 | 13,3 | 21 | 0,412 | 36 | 0,0123 |
| 7 | 10,6 | 22 | 0,325 | 37 | 0,0100 |
| 8 | 8,35 | 23 | 0,259 | 38 | 0,00795 |
| 9 | 6,62 | 24 | 0,205 | 39 | 0,00632 |

Conversion Chart for mm to Inches

| mm | Inches | mm | inches | mm | Inches |
|----|--------|----|--------|----|--------|
| 1 | 0.04 | 18 | 0.71 | 35 | 1.38 |
| 2 | 0.08 | 19 | 0.75 | 36 | 1.42 |
| 3 | 0.12 | 20 | 0.79 | 37 | 1.46 |
| 4 | 0.16 | 21 | 0.83 | 38 | 1.50 |
| 5 | 0.20 | 22 | 0.87 | 39 | 1.54 |
| 6 | 0.24 | 23 | 0.91 | 40 | 1.57 |
| 7 | 0.28 | 24 | 0.94 | 41 | 1.61 |
| 8 | 0.31 | 25 | 0.98 | 42 | 1.65 |
| 9 | 0.35 | 26 | 1.02 | 43 | 1.69 |
| 10 | 0.39 | 27 | 1.06 | 44 | 1.73 |
| 11 | 0.43 | 28 | 1.10 | 45 | 1.77 |
| 12 | 0.47 | 29 | 1.14 | 46 | 1.81 |
| 13 | 0.51 | 30 | 1.18 | 47 | 1.85 |
| 14 | 0.55 | 31 | 1.22 | 48 | 1.89 |
| 15 | 0.59 | 32 | 1.26 | 49 | 1.93 |
| 16 | 0.63 | 33 | 1.30 | 50 | 1.97 |
| 17 | 0.67 | 34 | 1.34 | | |

Equation for converting mm to inches:
mm divided by 25.4 = inches

Conversion Chart for Centigrade to Fahrenheit

| °C | °F | °C | °F | °C | °F |
|------|-------|-----|-------|-----|-------|
| -40 | -40.0 | -10 | +14.0 | +10 | +50.0 |
| -38 | -36.4 | -9 | +15.8 | +11 | +51.8 |
| -36 | -32.8 | -8 | +17.6 | +12 | +53.6 |
| -34 | -29.2 | -7 | +19.4 | +13 | +55.4 |
| -32 | -25.6 | -6 | +21.2 | +14 | +57.2 |
| -30 | -22.0 | -5 | +23.0 | +15 | +59.0 |
| -28 | -18.4 | -4 | +24.8 | +16 | +60.8 |
| -26 | -14.8 | -3 | +26.6 | +17 | +62.6 |
| -24 | -11.2 | -2 | +28.4 | +18 | +64.4 |
| -22 | -7.6 | -1 | +30.2 | +19 | +66.2 |
| -20 | -4.0 | 0 | +32.0 | +20 | +68.0 |
| -19 | -2.2 | +1 | +33.8 | +21 | +69.8 |
| -18 | +0.4 | +2 | +35.6 | +22 | +71.6 |
| -17 | +1.4 | +3 | +37.4 | +23 | +73.4 |
| -16 | +3.2 | +4 | +39.2 | +24 | +75.2 |
| -15 | +5.0 | +5 | +41.0 | +25 | +77.0 |
| -14 | +6.8 | +6 | +42.8 | +26 | +78.8 |
| -13 | +8.6 | +7 | +44.6 | +27 | +80.6 |
| -12 | +10.4 | +8 | +46.4 | +29 | +82.4 |
| --11 | +12.2 | +9 | +48.2 | +29 | +84.2 |
| | | | | +30 | +86.0 |

Equation for converting Centigrade to Fahrenheit:
32 + (°C x 1.8) = Fahrenheit



| Order Number | Page | Order Number | Page | Order Number | Page |
|--------------|----------------|--------------|----------------|--------------|----------------|
| 025-0480-000 | 16, 23, 33, 40 | 120110-0220 | 14 | 121583-0095 | 68 |
| 025-0487-000 | 50 | 120110-0221 | 14 | 121583-0094 | 67 |
| 025-8636-005 | 16, 23, 33, 40 | 120110-0222 | 14 | 121583-0095 | 68 |
| 025-8636-037 | 59 | 120110-0229 | 14 | 121583-0096 | 68 |
| 025-8636-053 | 50, 59 | 120190-0163 | 41 | 121583-0097 | 68 |
| 030-8531-030 | 13 | 121086-3278 | 34 | 121583-0098 | 68 |
| 030-8531-031 | 13 | 121583-0000 | 26 | 121583-0119 | 45 |
| 030-8531-032 | 13 | 121583-0001 | 26 | 121583-0120 | 46 |
| 030-8531-033 | 13 | 121583-0002 | 26 | 121583-0121 | 45 |
| 030-8581-029 | 12 | 121583-0003 | 26 | 121583-0122 | 46 |
| 030-8614-010 | 12, 17 | 121583-0004 | 27 | 121583-0123 | 45 |
| 030-8614-020 | 12, 17 | 121583-0005 | 27 | 121583-0124 | 46 |
| 030-8614-030 | 12, 17 | 121583-0006 | 27 | 121583-0125 | 45 |
| 031-8521-010 | 12, 17 | 121583-0007 | 27 | 121583-0126 | 46 |
| 031-8521-020 | 12, 17 | 121583-0008 | 28 | 121583-0127 | 46 |
| 031-8521-030 | 12, 17 | 121583-0009 | 28 | 121583-0128 | 46 |
| 031-8531-010 | 13 | 121583-0010 | 28 | 121583-0129 | 46 |
| 031-8531-011 | 13 | 121583-0011 | 28 | 121583-0130 | 46 |
| 031-8531-012 | 13 | 121583-0012 | 8 | 121583-0131 | 46 |
| 031-8531-013 | 13 | 121583-0013 | 8 | 121583-0132 | 46 |
| 031-8646-001 | 22, 24 | 121583-0014 | 9 | 121583-0133 | 46 |
| 031-8646-002 | 22, 24 | 121583-0015 | 9 | 121583-0134 | 46 |
| 031-8646-003 | 22, 24 | 121583-0016 | 10 | 121583-0135 | 47 |
| 031-8646-010 | 22, 24 | 121583-0017 | 10 | 121583-0136 | 47 |
| 031-8646-011 | 22, 24 | 121583-0018 | 36 | 121583-0187 | 66 |
| 031-8646-015 | 12 | 121583-0019 | 37 | 121583-0188 | 66 |
| 044-8597-000 | 58 | 121583-0020 | 38 | 121583-0189 | 66 |
| 044-8597-002 | 50 | 121583-0021 | 15, 23, 33, 40 | 121583-0190 | 66 |
| 044-5897-004 | 50 | 121583-0025 | 19 | 121583-0205 | 38 |
| 052-5809-003 | 70 | 121583-0026 | 19 | 121583-0211 | 36 |
| 052-8509-004 | 59 | 121583-0027 | 20 | 121583-0212 | 38 |
| 058-8578-100 | 33, 40 | 121583-0028 | 37 | 121583-0213 | 30 |
| 058-8578-101 | 33, 40 | 121583-0030 | 63 | 121583-0214 | 30 |
| 058-8578-102 | 33, 40 | 121583-0031 | 63 | 121583-0215 | 31 |
| 058-8578-103 | 33, 40 | 121583-0032 | 63 | 121583-0216 | 31 |
| 058-8578-105 | 33, 40 | 121583-0033 | 63 | 121583-0217 | 10 |
| 066-8516-005 | 9, 19, 27, 31 | 121583-0042 | 8 | 121586-0081 | 41, 54, 61, 72 |
| 075-8503-000 | 15, 22, 32, 39 | 121583-0043 | 9 | 121586-5067 | 54, 61, 72 |
| 075-8503-004 | 15, 22, 32, 39 | 121583-0058 | 56 | 121586-5068 | 54, 61, 72 |
| 075-8566-003 | 51 | 121583-0061 | 37 | 121586-5069 | 54, 61, 72 |
| 075-8566-004 | 59 | 121583-0079 | 65 | 121586-5075 | 24 |
| 120090-0165 | 24 | 121583-0080 | 65 | 121586-5077 | 24 |
| 120090-0171 | 24 | 121583-0081 | 65 | 121586-5131 | 53, 60, 71 |
| 120110-0011 | 43 | 121583-0082 | 65 | 121586-5132 | 53, 60, 71 |
| 120110-0013 | 43 | 121583-0083 | 19 | 121586-5134 | 34 |
| 120110-0014 | 43 | 121583-0084 | 19 | 121586-5135 | 34 |
| 120110-0020 | 38 | 121583-0085 | 20 | 121586-5136 | 34 |
| 120110-0024 | 36 | 121583-0086 | 20 | 121586-5149 | 24 |
| 120110-0026 | 15, 23, 33, 40 | 121583-0091 | 67 | 121586-5156 | 53, 60, 71 |
| 120110-0075 | 70 | 121583-0092 | 67 | 121586-5192 | 17 |
| 120110-0083 | 38 | 121583-0093 | 67 | 121586-5193 | 17 |
| 120110-0217 | 16, 23, 33, 39 | 121583-0094 | 67 | 121586-5195 | 60, 71 |

| Order Number | Page | Order Number | Page | Order Number | Page |
|--------------|----------------|--------------|----------------|--------------|----------------|
| 121586-5197 | 60 | 121668-0272 | 49, 69 | 351-8697-005 | 15 |
| 121586-5200 | 60, 71 | 121668-0274 | 49, 69 | 351-8697-007 | 22 |
| 121586-5202 | 71 | 121668-0275 | 49, 69 | 351-8697-009 | 15 |
| 121586-5203 | 71 | 121668-0276 | 49, 69 | 351-8697-010 | 22 |
| 121586-5206 | 71 | 121668-0277 | 49, 69 | 351-8697-014 | 15 |
| 121586-5217 | 41 | 121668-0278 | 49, 69 | 430-8645-000 | 22, 24 |
| 121586-5229 | 17 | 121668-0279 | 49, 69 | 430-8645-002 | 22, 24 |
| 121586-5232 | 17 | 121668-0280 | 49, 69 | 430-8645-003 | 22, 24 |
| 121586-5234 | 53 | 121668-0281 | 49, 69 | 430-8645-007 | 22, 24 |
| 121586-5235 | 53 | 192900-0000 | 39 | 430-8645-009 | 22, 24 |
| 121586-5237 | 41 | 192900-0001 | 39 | 980-8672-004 | 15, 23 |
| 121586-5242 | 34 | 192900-0002 | 39 | 980-8672-005 | 17, 24 |
| 121586-5249 | 34 | 192900-0003 | 39 | 980-8672-010 | 15, 23 |
| 121586-5244 | 24 | 192922-1450 | 41 | 980-8672-015 | 52 |
| 121586-5253 | 17 | 192990-7600 | 41 | 980-8672-016 | 52 |
| 121586-5257 | 17 | 217-8516-001 | 10, 20, 28, 37 | 980-8672-017 | 52 |
| 121586-5259 | 71 | 217-8516-005 | 71 | 980-8672-018 | 52 |
| 121667-0022 | 39, 49, 58, 69 | 217-8516-007 | 60 | 980-8672-019 | 52 |
| 121667-0023 | 39, 49, 58, 69 | 249-8619-011 | 71 | 980-8672-020 | 52 |
| 121667-0024 | 39, 49, 58, 69 | 248-8653-026 | 57 | 980-8672-021 | 52 |
| 121667-0025 | 39, 49, 58, 69 | 248-8653-031 | 42 | 980-8672-034 | 51 |
| 121688-0021 | 32 | 248-8653-053 | 42 | 995-0001-507 | 54, 61, 72 |
| 121688-0025 | 32 | 248-8653-063 | 17, 24 | 995-0001-585 | 41, 54, 61, 72 |
| 121668-0022 | 32 | 248-8653-064 | 71 | | |
| 121668-0026 | 32 | 248-8653-066 | 60 | | |
| 121668-0027 | 32 | 248-8653-105 | 42 | | |
| 121668-0028 | 32 | 248-8653-106 | 42 | | |
| 121668-0029 | 32 | 248-8653-134 | 42 | | |
| 121668-0032 | 32 | 249-8619-001 | 64 | | |
| 121668-0033 | 32 | 249-8619-002 | 64 | | |
| 121668-0034 | 32 | 249-8619-003 | 64 | | |
| 121668-0035 | 22 | 249-8619-004 | 64 | | |
| 121668-0124 | 32 | 249-8619-005 | 11 | | |
| 121668-0125 | 32 | 249-8619-006 | 11 | | |
| 121668-0126 | 32 | 249-8619-007 | 21 | | |
| 121668-0127 | 32 | 249-8619-010 | 17, 24 | | |
| 121688-0128 | 32 | 249-8619-017 | 57 | | |
| 121688-0202 | 49, 69 | 317-8648-008 | 41, 54, 61, 72 | | |
| 121668-0220 | 58, 65 | 317-8649-034 | 17, 24 | | |
| 121668-0221 | 49, 69 | 317-8675-054 | 71 | | |
| 121668-0222 | 58, 65 | 330-8672-019 | 37, 38 | | |
| 121688-0252 | 49, 69 | 330-8672-021 | 37, 38 | | |
| 121688-0253 | 49, 69 | 330-8674-020 | 58, 69 | | |
| 121668-0254 | 58, 65 | 330-8674-024 | 69 | | |
| 121668-0255 | 58, 65 | 330-8674-025 | 58, 69 | | |
| 121668-0265 | 58, 65 | 330-8674-026 | 69 | | |
| 121668-0266 | 58, 65 | 331-8547-029 | 60 | | |
| 121668-0267 | 58, 65 | 351-8697-000 | 22 | | |
| 121668-0268 | 58, 65 | 351-8697-001 | 15 | | |
| 121668-0269 | 49, 69 | 351-8697-002 | 15 | | |
| 121668-0270 | 49, 69 | 351-8697-003 | 15 | | |
| 121668-0271 | 49, 69 | 351-8697-004 | 15 | | |

Product Safety and Warranty

1. MATERIAL CONTENT AND PHYSICAL FORM
Electrical connectors do not usually contain hazardous materials.

Electrical connectors and individual components do not release or otherwise result in exposure to hazardous chemicals under normal conditions of use and fall under the definition of "Article," under the Hazard Communication Standard, 29 CFR 1910.1200, and are not considered hazardous materials.

Solder and fluxes can be hazardous if inhaled or absorbed through the skin and should only be used as recommended by the manufacturer. Please consult your solder and flux manufacturer for more specific application recommendations.

2. FIRE CHARACTERISTICS AND ELECTRIC SHOCK HAZARD

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

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. Always wear safety glasses to avoid potential injury to eyes during cleaning, soldering, fiber preparation, etc.

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. Proper lifting techniques shall be used for handling shipping cartons.

4. DISPOSAL

Please recycle, reclaim or dispose of connectors and individual components in accordance with local, state and federal laws. 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 specified application tools, cleaning materials and assembly instructions documented in the Data Sheet/Catalog. Do not permit untrained personnel to wire, assemble or tamper with connectors. For operation voltage please see appropriate national regulations.

IMPORTANT GENERAL INFORMATION

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

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

(ii) Temperature

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

(iii) Pressure

All pressure information given are differential pressure limits. The specific differential pressure limits, across the connector interface, are documented in the Data Safety/catalog

(iv) 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.

Commodities in this catalog may be controlled for export or re-export under the Export Administration Regulations (EAR), Nuclear Regulatory Commission (NRC) Regulations, or by the International Traffic in Arms Regulations (ITAR) when specifically designed, modified or configured for military use.

ITT Corporation Interconnect Solutions Division, ("ITT") manufactures high quality products. However, these products are intended to be used in accordance with the specifications in this publication. 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.

Product Warranty

A limited product warranty applies to ITT products. Please refer to www.ittcannon.com (General Terms and Conditions of Sale) for the complete text of ITT's applicable Terms and Conditions of Sale, including warranty.

This publication is not to be construed as an offer. It is intended merely as an invitation to make an offer. ITT does not assume liability for any patent infringement or violation of other rights claimed by third parties which may result from its use.

With prior written consent, reprinting this publication without any modifications is generally permitted.

"ITT", the Engineered Blocks Logo and "Engineered for life" are registered trademarks of ITT Corporation. All other trademarks or registered trademarks are property of their respective owners. All dates subject to change without notice.






ITT



Global Design & Manufacturing and Customer Support







North America

 **MEXICO - Cannon, VEAM**
Av. Libre Comercio s/n-
entre Calzada Industrial
Nuevo Nogales y Calzada
del Raquet Club,
Parque Industrial Nuevo Nogales
phone: +52.631.3110050
fax: +52.631.3110060

 **USA - Cannon**
56 Technology Drive
Irvine, CA 92618
toll free: +1.800.854.3028


Europe & Middle East



  **GERMANY - Cannon, VEAM**
Cannonstrasse 1
Weinstadt, 71384
phone: +49.7151.699.0
fax: +49.7151.699.217

  **ITALY - VEAM**
Corso Europa 41/43
Lainate (MI), Italy 20020
phone: +39.02938721
fax: +39.0293872300

Asia

  **CHINA - Cannon, VEAM**
Tuopandun Industrial Area, Jinda Cheng,
Xiner Village, Shajing Town,
Baoan District, Shenzhen City,
Guangdong, China 518125
phone: +86.755.2726.7238
fax: +86.755.2726.7515

 **HONG KONG - Cannon, VEAM**
Units 2405-6, 24/F, ING Tower
308 Des Voeux Road
Central
Hong Kong
phone: +852.2732.2720
fax: +852.2732.2919

  **JAPAN - Cannon, VEAM**
11-3, 5 Chome, Hibarigaoka, Zama-shi
Kanagawa, Japan 228-0003
phone: +81.462.57.2010
fax: +81.462.57.1680

X-ON Electronics

Largest Supplier of Electrical and Electronic Components

Click to view similar products for [Automotive Connectors](#) category:

Click to view products by [ITT](#) manufacturer:

Other Similar products are found below :

[003-018-000](#) [60403001](#) [60993906-B](#) [M902-2131](#) [M902-2161](#) [M902-2344](#) [72.330.1035.1](#) [73.353.4028.0](#) [F119300-B](#) [F166900](#) [F258300-B](#)
[F358300-B](#) [F407400](#) [F444110](#) [F487000](#) [F509500B-B](#) [827153-1](#) [8N1515-32-24P](#) [9-1326729-8](#) [925474-1](#) [928905-1](#) [964562-4](#) [968782-1](#)
[GT17SA-8DS-HU](#) [98891-1012](#) [98947-1016](#) [12004147](#) [12004475-L](#) [12010290](#) [12010309-B](#) [12015454](#) [12020219-B](#) [12041318-B](#) [12052225-](#)
[L](#) [12052466](#) [12064869](#) [12004327-B](#) [12015308](#) [12015384](#) [12015909](#) [1-21030-1](#) [12041254](#) [12041318](#) [12047946-B](#) [12047957](#) [12047957-L](#)
[12059473](#) [12066261](#) [12110546](#) [12110546-B](#)