cannon

# APD Series

## ISO 15170 Derived Connectors



ITT

# We Connect

## When it matters most

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

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

## Interconnect solutions for the harshest environments.

cannon

### The ITT Cannon difference

- Global capabilities & local support
- Proven application expertise
- A century of interconnect leadership
- A committed innovator & business partner

### About ITT

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



# APD Example Applications



Agriculture



Truck



Bus



Forestry



Construction



Recreation



Mining



Specialty

Dimensions shown in mm
Specifications and dimensions subject to change

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# Cannon APD / ISO 15170 Connectors



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. 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.

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Product Overview

| 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 tin, silver, gold plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold 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 | PCB |
| **Type** | Plug | Receptacle Flange | Plug | Receptacle |
| **Contacts Materials** | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated | Copper alloy tin, silver, gold plated |
| **Contact style** | Stamped & Formed Machined | Stamped & Formed Machined | Stamped & Formed Machined | Machined |
| **Page Number** | 56 | 57 | 63 | 70 |

# APD Technical Data, High Power 1-way



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

- 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/s², 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 |

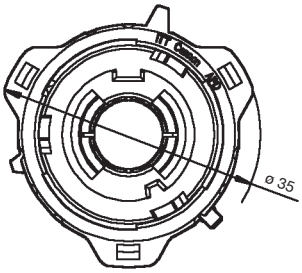
Further information available upon request.

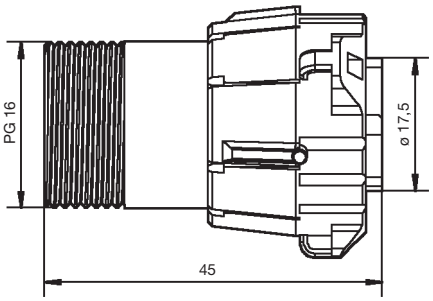
Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power Plug, 1-way

## High Power Plug, 1-way





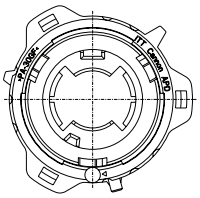

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0012 | APD-5BSH | 5 | blue (RAL 5012) |
| 121583-0013 | APD-6BSH | 6 | red (RAL 2002) |
| 121583-0042 | APD-7BSH | 7 | black (RAL 9005) |

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.

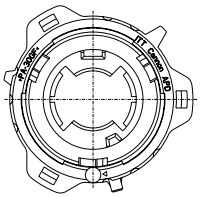
## Coding, 1-way layouts

View on Mating Face

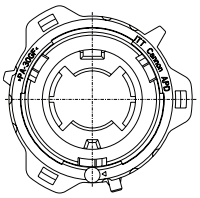
Note: the connectors offer both mechanical keying and visual coding by different colors.



Code 5 blue



Code 6 red

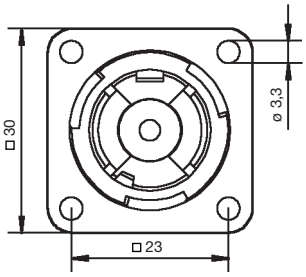


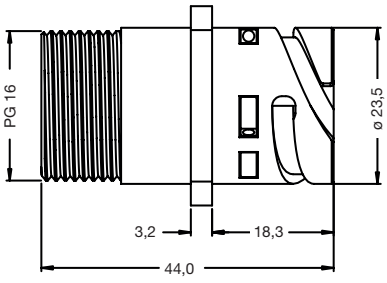
Code 7 black

# APD High Power Flange Receptacle, 1-way

## High Power Flange Receptacle, 1-way





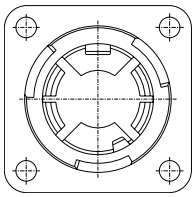

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0014 | APD-5APH | 5 | blue (RAL 5012) |
| 121583-0015 | APD-6APH | 6 | red (RAL 2002) |
| 121583-0043 | APD-7APH | 7 | black (RAL 9005) |

Packaging unit 100 pcs.
Pin crimp contacts see pages 12, 13 and 14.
Accessories, see pages 15 and 16.

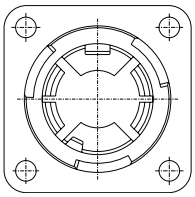
## Coding, 1-way layouts

View on Mating Face

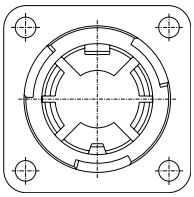
Note: the connectors offer both mechanical keying and visual coding by different colors.



Code 5 blue



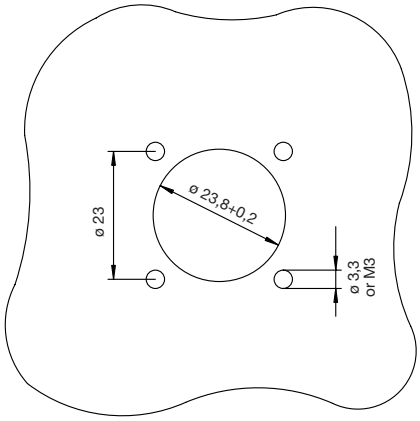
Code 6 red

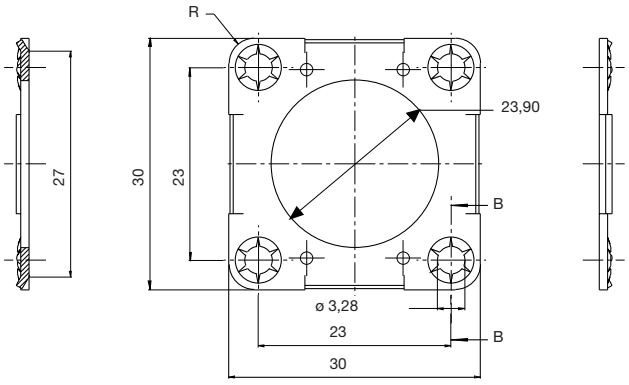


Code 7 black

## Panel Cut Out

Flange for all Flange Receptacles



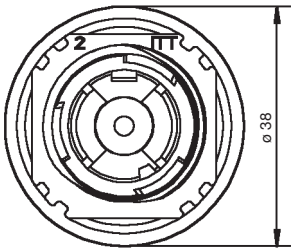

Order Number: 066-8516-005
Metal mounting flange for wall mounting of flange receptacles.

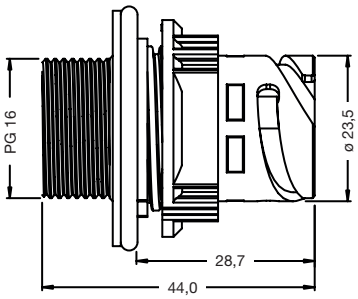
Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power Jam Nut Receptacle, 1-way

## High Power Jam Nut Receptacle, 1-way





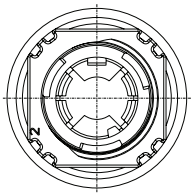

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0016 | APD-5CPH | 5 | blue (RAL 5012) |
| 121583-0017 | APD-6CPH | 6 | red (RAL 2002) |
| 121583-0217 | APD-7CPH | 7 | black (RAL 9005) |

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.

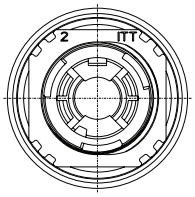
## Coding, 1-way layouts

View on Mating Face

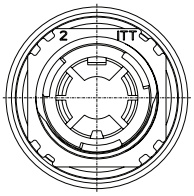
Note: the connectors offer both mechanical keying and visual coding by different colors.




Code 5 blue



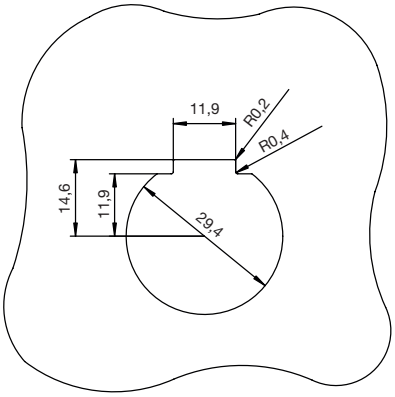

Code 6 red

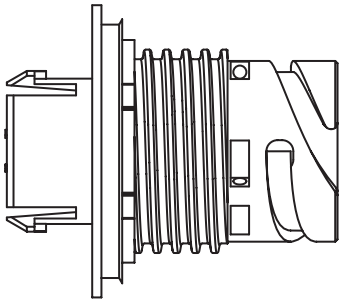



Code 7 black

## 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

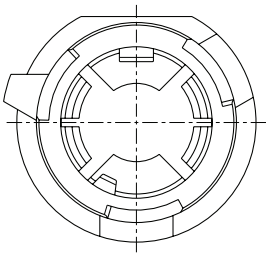
## Jam Nut, special

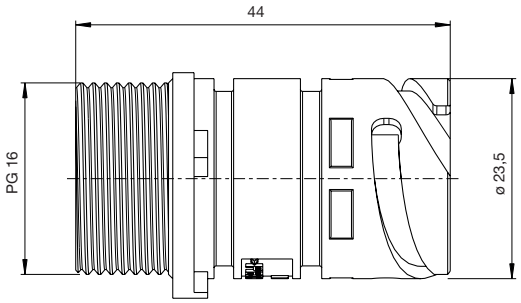
| Designation | Order No. |
|---|---|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |

# APD High Power Snap-In Receptacle, 1-way

## High Power Snap-In Receptacle, 1-way







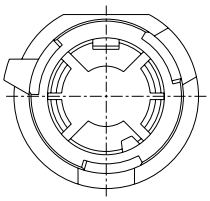

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 249-8619-005 | APD-7SPH | 7 | black (RAL 9005) |
| 249-8619-006 | APD-6SPH | 6 | red (RAL 2002) |
| consult factory | APD-5SPH | 5 | blue (RAL 5012) |

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.

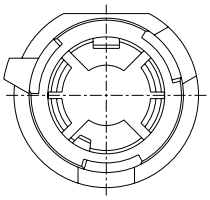
## Coding, 1-way layouts

View on Mating Face

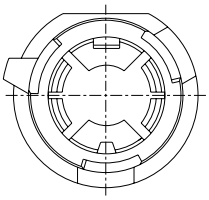
Note: the connectors offer both mechanical keying and visual coding by different colors.



Code 5 blue



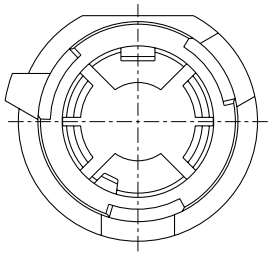
Code 6 red

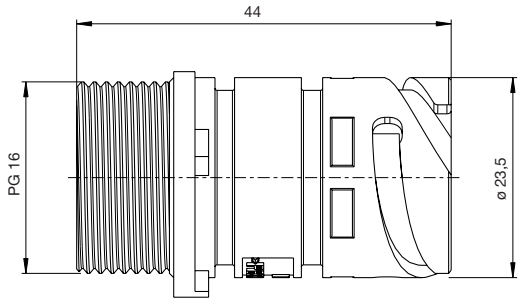


Code 7 black

## Panel Cut Out

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






Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power 1-way, Contacts

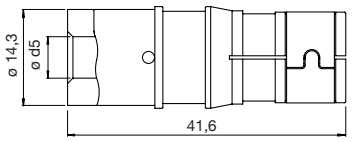
## Machined Socket Crimp-Contacts, High Performance Copper, Silver plated

| Order No. | AWG | Contact size | d5+0,15 |
|---|---|---|---|
| 031-8521-030 (16,00 mm²) | | 0 | 6,2 |
| 031-8521-010 (25,00 mm²) | 4 | 0 | 7,6 |
| 031-8521-020 (35,00 mm²) | 2 | 0 | 9,1 |
| 031-8646-015 (50,00 mm²) | with bunch | 0 | 10,2 |

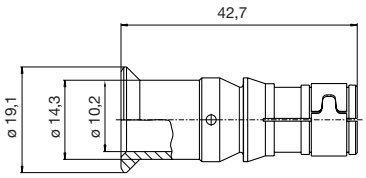
Packaging unit 100 pcs.



16...35 mm²




50 mm²



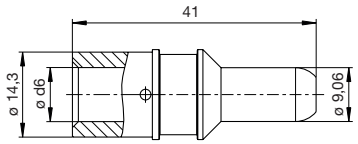

## Machined Pin Crimp Contacts, High Performance Copper, Silver plated

| Order No. | AWG | Contact size | d6+0,15 |
|---|---|---|---|
| 030-8614-030 (16,00 mm²) | | 0 | 6,2 |
| 030-8614-010 (25,00 mm²) | 4 | 0 | 7,6 |
| 030-8614-020 (35,00 mm²) | 2 | 0 | 9,1 |
| 030-8581-029 (50,00 mm²) | with bunch | 0 | 10,2 |

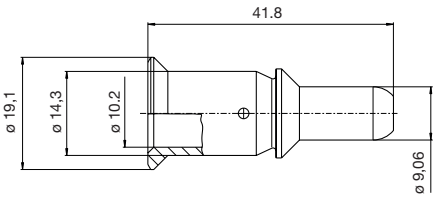
Packaging unit 100 pcs.



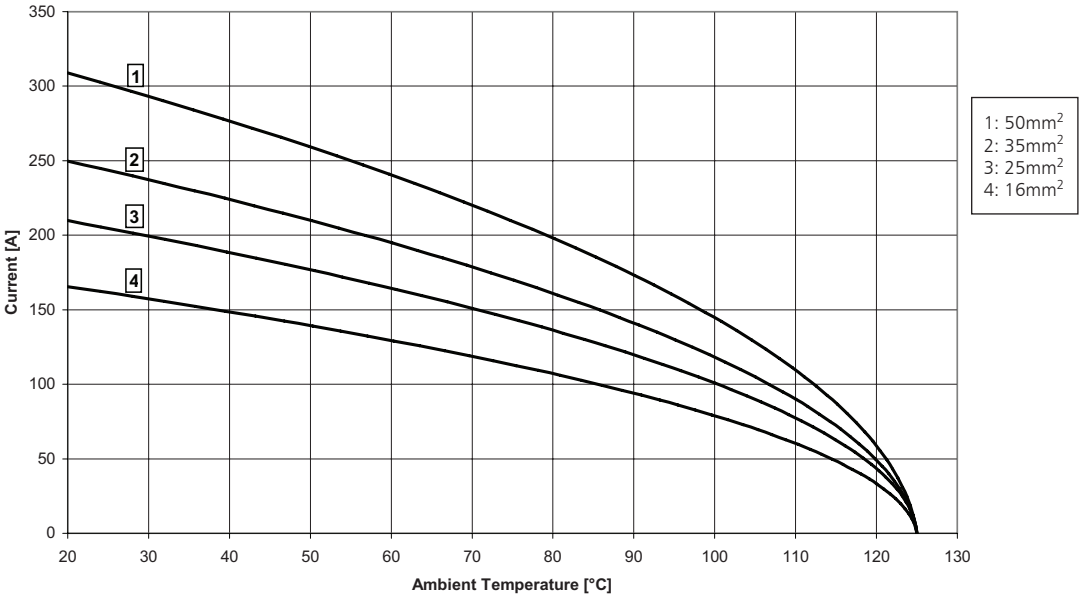
16...35 mm²




50 mm²




## Derating Curve, High Performance Copper Contact




Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power 1-way, Contacts

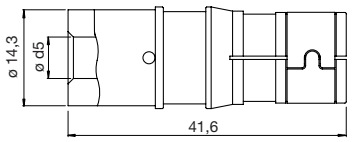
## Machined Socket Crimp-Contacts, Standard Brass, Silver plated

| Order No. | AWG | Contact size | d5+0,15 |
|---|---|---|---|
| 031-8531-010 (16,00 mm²) | | 0 | 6,2 |
| 031-8531-011 (25,00 mm²) | 4 | 0 | 7,6 |
| 031-8531-012 (35,00 mm²) | 2 | 0 | 9,1 |
| 031-8531-013 (50,00 mm²) | with bunch | 0 | 10,2 |

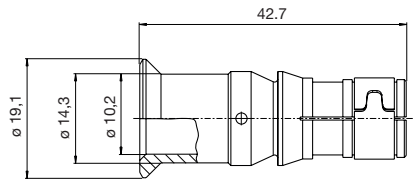
Packaging unit 100 pcs.
*Available by Request



16...35 mm²




50 mm²



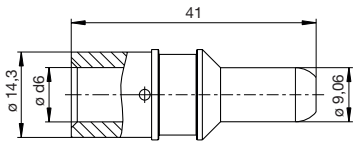

## Machined Pin Crimp Contacts, Standard Brass, Silver plated

| Order No. | AWG | Contact size | d6+0,15 |
|---|---|---|---|
| 030-8581-030 (16,00 mm²) | | 0 | 6,2 |
| 030-8581-031 (25,00 mm²) | 4 | 0 | 7,6 |
| 030-8581-032 (35,00 mm²) | 2 | 0 | 9,1 |
| 030-8581-033 (50,00 mm²) | with bunch | 0 | 10,2 |

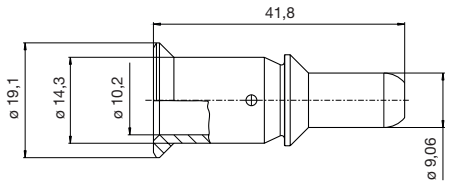
Packaging unit 100 pcs.



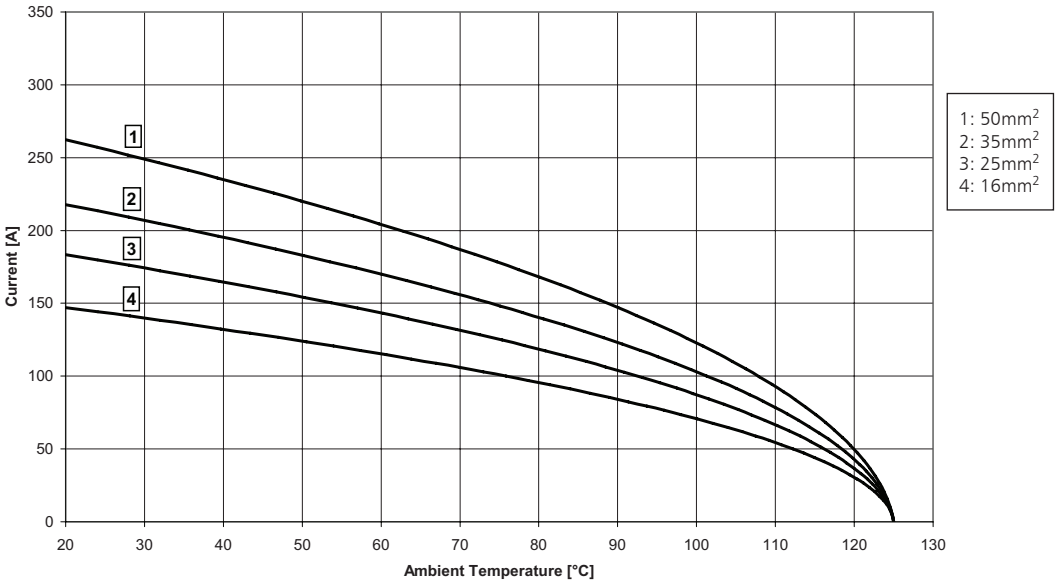
16...35 mm²




50 mm²




## Derating Curve, Standard Brass Contact




Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power Finger Protected 1-way, Contacts



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

## Applications

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

## Power Distribution in:

- Trucks
- Tractors
- Hybrid and Electric Vehicles

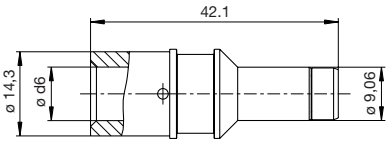
## Machined Pin Crimp Contacts, High Performance Copper, Silver plated, Finger Protected

| Order No. | AWG | Contact size | d6+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 |

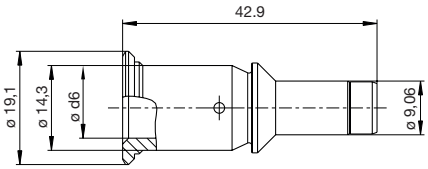
Packaging unit 100 pcs.



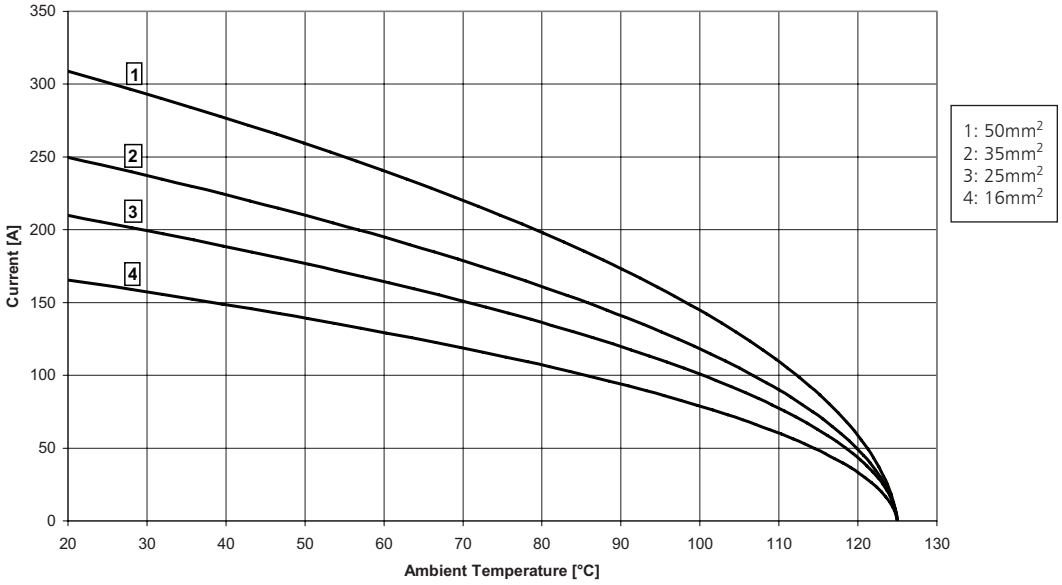
16...35 mm$^2$




50 mm$^2$




## Derating Curve, High Performance Copper Contact, Finger Protected




Dimensions shown in mm
Specifications and dimensions subject to change

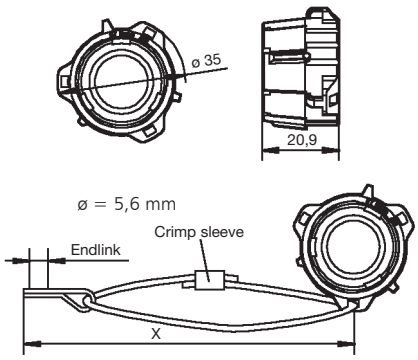
# APD High Power 1-way, Contacts, Seals, Nut

## 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





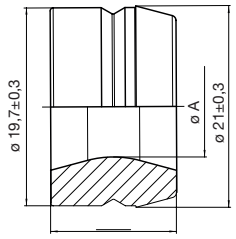

## Cable Seal for Cable (in acc. to DIN 670722 FLY/ DIN 72551 FLRY)

High Power 1-way

| Order No. | Insulation ø | ø 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 | 9,8 |
| 351-8697-002 | 12,3 - 13,9 | 11,9 |
| 351-8697-003 | 14,2 - 15,8 | 13,8 |

Packaging unit 100 pcs.





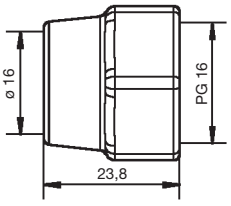

## Hexagonal Nut

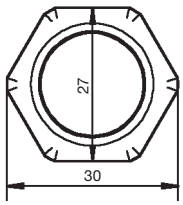
High Power 1-way

| Order No. |
|---|
| 217-8516-010 |

Packaging unit 100 pcs.





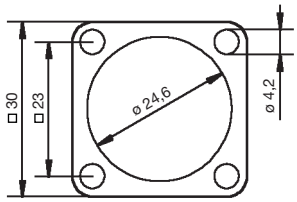

## Flange Gasket

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 Flange Receptacle, High Power 1-way

| Order No. |
|---|
| 980-8672-010 (ø 17 mm) |

Packaging unit 100 pcs.



## 90˚ Endbell

For 1-way Plug and Receptacle up to 25 $mm^2$ wire

| Order No. |
|---|
| 980-8672-004 |

Packaging unit 100 pcs.



ø max. = 17,4 mm
thread = PG 16

Dimensions shown in mm
Specifications and dimensions subject to change

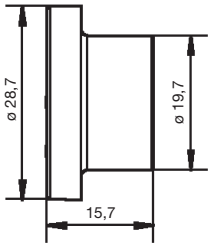
# APD Accessories, 1-way

## Dust Cap for Plug

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

Packaging unit 100 pcs.



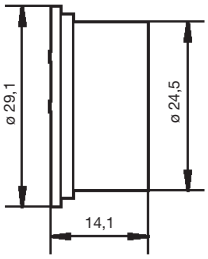



## Dust Cap for Receptacle

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

Packaging unit 100 pcs.






## Blind Socket

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

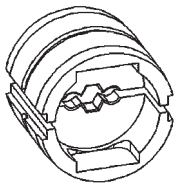
| Order No. |
|---|
| 120110-0217 |

Packaging unit 100 pcs.
Note: All cavities closed, mates with 1-7-way APD versions.



# APD Tooling High Power, 1-way

## Tooling for 1-way High Power Connectors



| Contact / Socket | Crimp-Dies |
|---|---|
| 031-8561-000 (50,00 mm²) | 121586-5229 |
| 031-8521-020 (35,00 mm² / AWG 2) | 121586-5229 |
| 031-8521-010 (25,00 mm² / AWG 4) | 121586-5229 |
| 031-8521-030 (16,00 mm²) | 121586-5229 |

| Contact / Pin | Crimp-Dies |
|---|---|
| 030-8592-000 (50,00 mm²) | 121586-5229 |
| 030-8614-020 (35,00 mm² / AWG 2) | 121586-5229 |
| 030-8614-010 (25,00 mm² / AWG 4) | 121586-5229 |
| 030-8614-030 (16,00 mm²) | 121586-5229 |
| Optional locator | 121586-5232 |

## Assembly Tools Jam Nut Receptacle

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

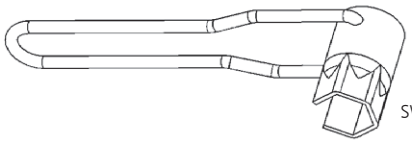


SW30

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

## Assembly Tools (Hexagonal Nut)

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

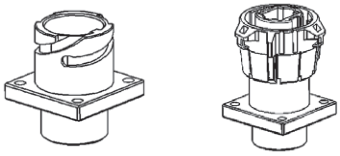


SW27

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

Torque: 2.5 ± 0.5Nm

## Assembly and Torque Wrench Adapter

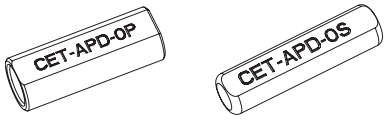


| Designation | Order No. |
|---|---|
| MA-APD-1/ 2-P | 248-8653-063 |
| MA-APD-1/ 2-R | 249-8619-010 |

1/4" adaption

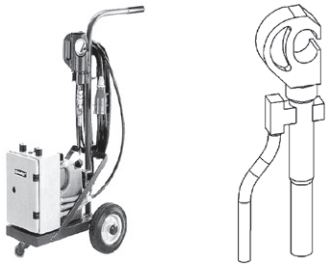
## Contract Extraction Tool

Housing can not be reused.




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

## Crimp Tool



| Designation | 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

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Technical Data, High Power 2-way*

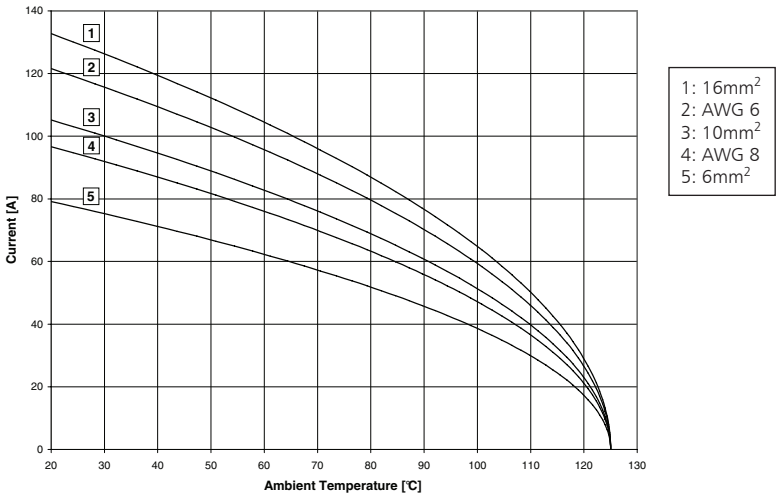
| Electrical Data | |
|---|---|
| **Operating Voltage** | 48 VDC* |
| **Operating Current** | see derating curve |
| **Contact Resistance** | 2 mΩ max. |
| **Voltage Proof** | 1000 VAC, 60 seconds |
| **Insulation Resistance** | 10 MΩ min. |

| 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



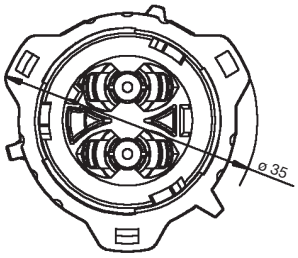

1: 16mm²
2: AWG 6
3: 10mm²
4: AWG 8
5: 6mm²

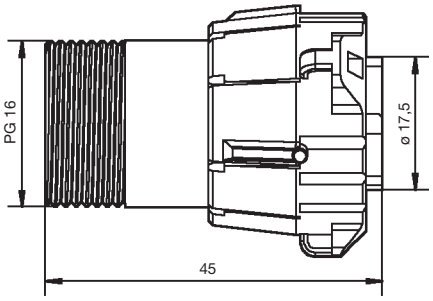
Further information available upon request.

# APD High Power, Plug, Flange Receptacle 2-way

## High Power Plug, 2-way





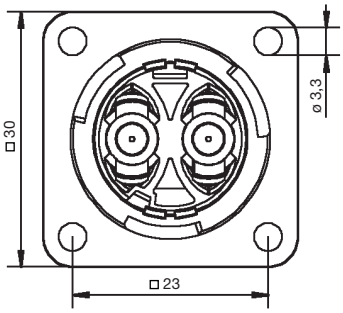

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0083 | APD-1BSH8-2-12 | 1 | grey (RAL 7036) |
| 121583-0025 | APD-1BSH8-2 | 1 | black (RAL 9005) |
| 121583-0084 | APD-1BSH8-2-14 | 1 | blue (RAL 5012) |

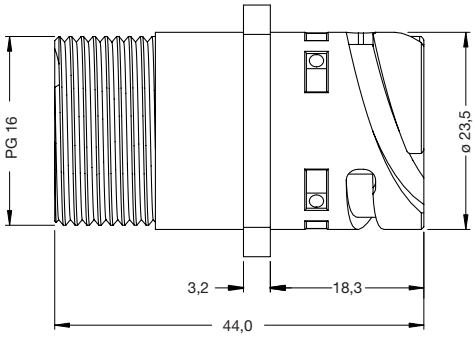
Packaging unit 100 pcs.
Socket Crimp contacts see page 22.

Accessories, see pages 22 and 23.
Note: Always use hext nut and cable seal.

## High Power Flange Receptacle, 2-way





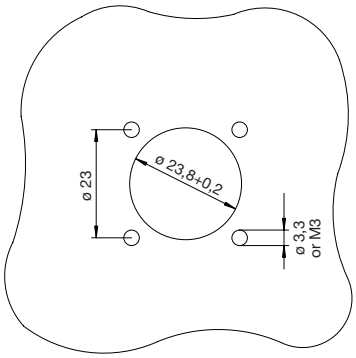

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0026 | APD-1APH8-2 | 1 | black (RAL 9005) |

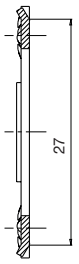
Packaging unit 100 pcs.
Pin crimp contacts see page 22.

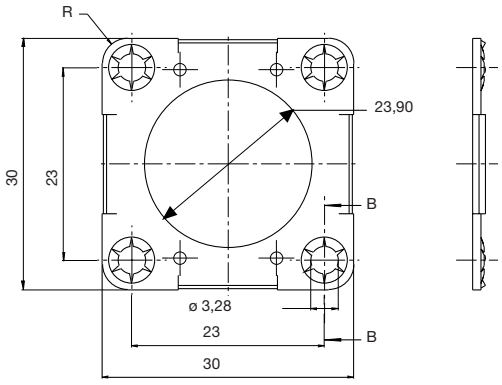
Accessories, see pages 22 and 23.
Note: Always include hext nut and cable seal.

## Panel Cut Out

Flange for all Flange Receptacles




Note: Metal mounting flange for wall mounting of flange receptacles

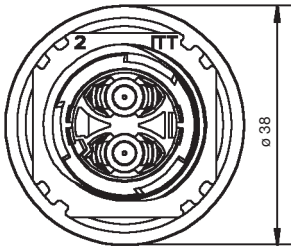
| Order No. |
|---|
| 066-8516-005 |

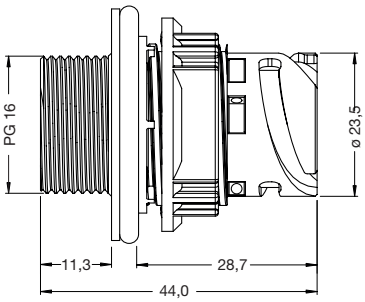
Dimensions shown in mm
Specifications and dimensions subject to change

# APD High Power Jam Nut Receptacle, 2-way

## High Power Jam Nut Receptacle, 2-way





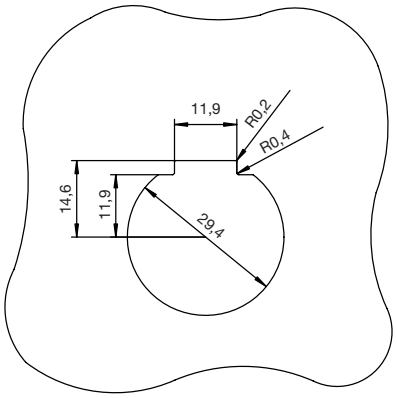

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0085 | APD-1CPH8-2-12 | 1 | grey (RAL 7036) |
| 121583-0027 | APD-1CPH8-2 | 1 | black (RAL 9005) |
| 121583-0086 | APD-1CPH8-2-14 | 1 | blue (RAL 5012) |

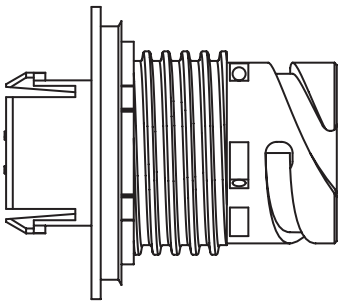
Packaging unit 100 pcs.
Pin crimp contacts see page 22.
Accessories, see pages 22 and 23.

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

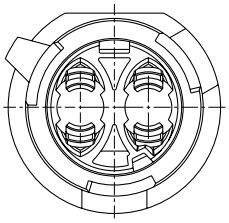
## Jam Nut, special

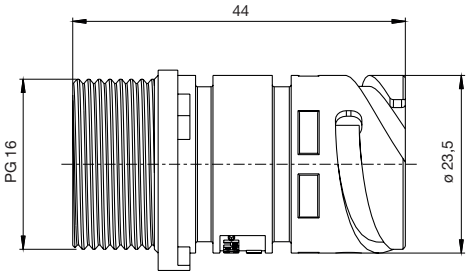
| Designation | Order No. |
|---|---|
| for special wall thickness 2,0 - 5,0 mm | 217-8516-001 |

# APD High Power Snap-In Receptacle, 2-way

## 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 hext nut and cable seal.

## Panel Cut Out

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

Dimensions shown in mm
Specifications and dimensions subject to change

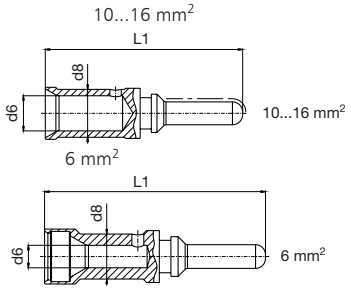
# APD High Power 2-way, Contacts, Accessories

## Machined Pin Crimp Contacts, Standard Silver Plated

| Order No. | d6 | d8 | L1 |
|---|---|---|---|
| 430-8645-000 (6,00 mm²) * | 3,4 | 6,8 | 33,4 |
| 430-8645-009 (10,00 mm²) | 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 mm²) | 5,5 | 7,5 | 30,9 |

Packaging unit 100 pcs.
* use individual wire seal or grommet



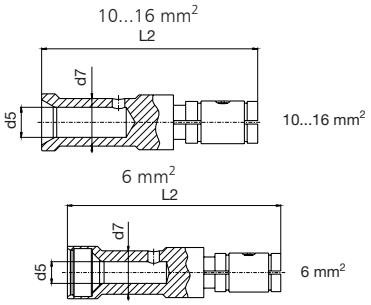



## Machined Socket Crimp Contacts, Standard Silver Plated

| Order No. | d5 | d7 | L2 |
|---|---|---|---|
| 031-8646-010 (6,00 mm²) * | 3,4 | 6,8 | 33,4 |
| 031-8646-011 (10,00 mm²) | 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 mm²) | 5,5 | 7,5 | 30,9 |

Packaging unit 100 pcs.
* use individual wire seal or grommet





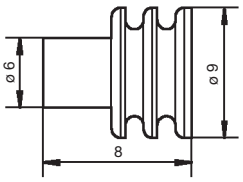

## Individual Wire Seals

For High Power 2-way 6 mm² only

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

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





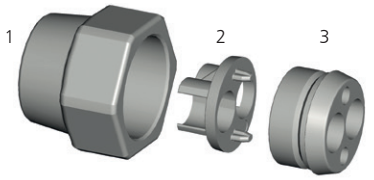

## Cable Sealing Set

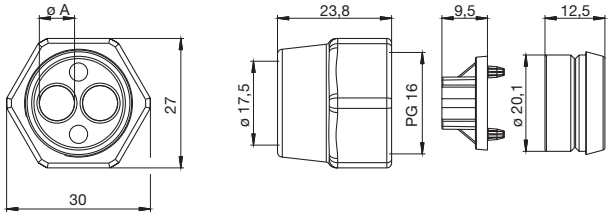
For High Power 2-way

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.



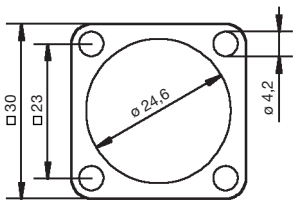

## Flange Gasket

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.





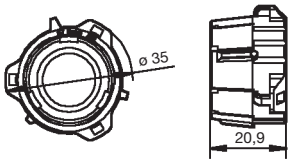
# APD High Power 2-way, Accessories

## Sealing Cap for Receptacle

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

Packaging unit 100 pcs.



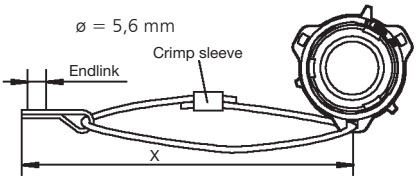



## APD-DP with rope, end link and eyelet

X = Total rope length upon request

| Order No. |
|---|
| 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.



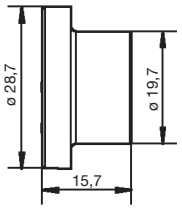
ø max. = 17,4 mm
thread = PG 16

## Dust Cap for Plug

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

Packaging unit 100 pcs.



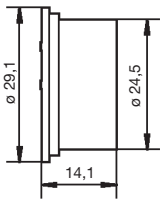



## Dust Cap for Receptacle

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

Packaging unit 100 pcs.






## Blind Socket

For 1 / 2 / 4 / 6 / 7-way

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

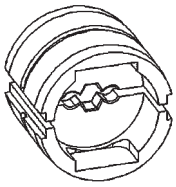
Packaging unit 100 pcs.
Note: All cavities closed, mates with 1-7-way APD versions.



Dimensions shown in mm
Specifications and dimensions subject to change

# APD Tooling High Power, 2-way

## Crimp Die Tooling for 2-way High Power Connectors

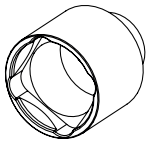


| Contact / Socket | Designation | Order No. |
|---|---|---|
| 031-8646-010 (6,00 $mm^2$) with individual wire seal | CT120090-165 | 120090-0165 |
| 031-8646-011 (10,00 $mm^2$) | CT120090-165 | 120090-0165 |
| 031-8646-002 (AWG 8) | CT120090-165 | 120090-0165 |
| 031-8646-003 (AWG 6) | CT120090-165 |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

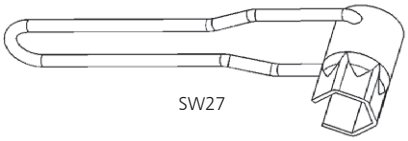


SW30

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

## Assembly Tools Hexagonal Nut

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

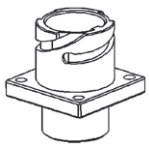


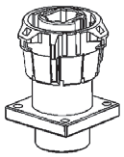
SW27

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

Torque 2,5 +/- 0,5 Nm

## Assembly and Torque Wrench Adapter

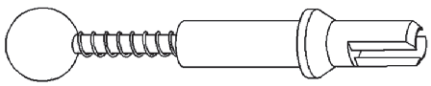




| Designation | Order No. |
|---|---|
| MA-APD-1/2-P | 248-8653-063 |
| MA-APD-1/2-R | 249-8619-010 |

1/4" adaption

## Contract Extraction Tool



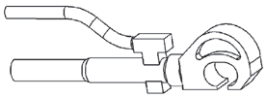
| Designation | Order No. |
|---|---|
| CET- APD-2 | 121586-5149 |

for pin and socket contacts

## 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 Technical Data, 4-way



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 140 °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/s², 3 x 100h, RT and 120°C (ISO 15170-2)* |

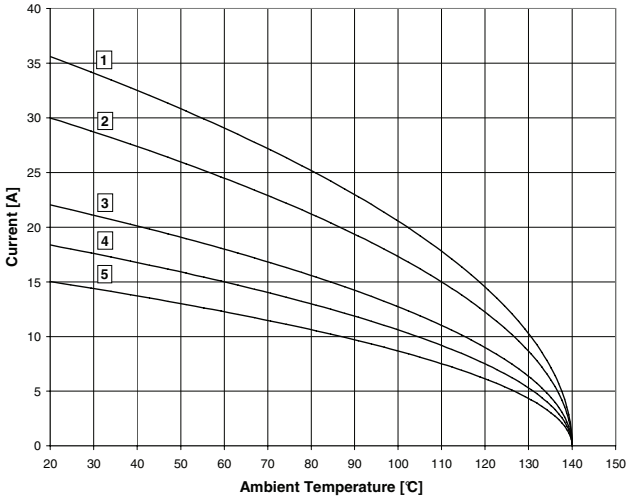
| Materials List | |
|---|---|
| **Housing Parts** | PBT GF |
| **Sealing Parts** | HNBR (alternative FKM) |
| **Coupling Nut** | PA 66 GF |
| **Contacts** | Copper Alloy, Ag plated |

* Further information available upon request.

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Plug, 4-way

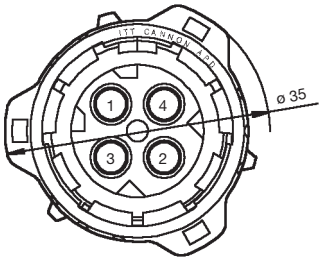
## Derating Curve

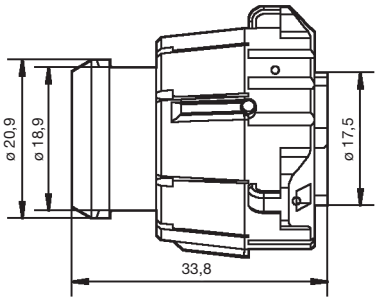



1: APK-_25-40/ 4,0mm²
2: APK-_25-25/ 2,5mm²
3: APK-_25-25/ 1,5mm²
4: APK-_25-10/ 1,0mm²
5: APK-_25-10/ 0,5mm²

## 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

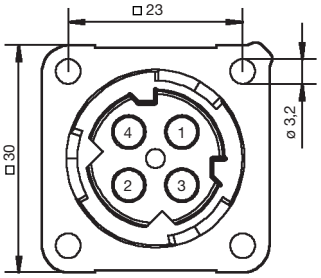

Code 4 blue

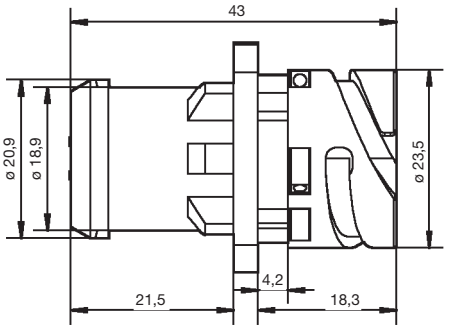
Note: The connectors offer both mechanical keying and visual coding by different colors.

# APD Flange Receptacle, 4-way

## Flange Receptacle, 4-way





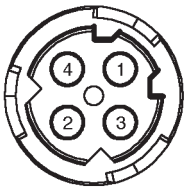




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0004 | APD-1AP-K2 | 1 | black (RAL 9005) |
| 121583-0005 | APD-2AP-K2 | 2 | grey (RAL 7036) |
| 121583-0006 | APD-3AP-K2 | 3 | green (RAL 6029) |
| 121583-0007 | APD-4AP-K2 | 4 | blue (RAL 5012) |

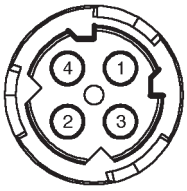
Packaging unit 100 pcs.
Pin crimp contacts see page 32.
Accessories, see pages 32 and 33.

## Coding, 4-way layouts

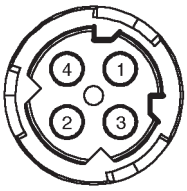
View on Mating Face



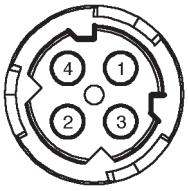

Code 1 black




Code 2 grey




Code 3 green

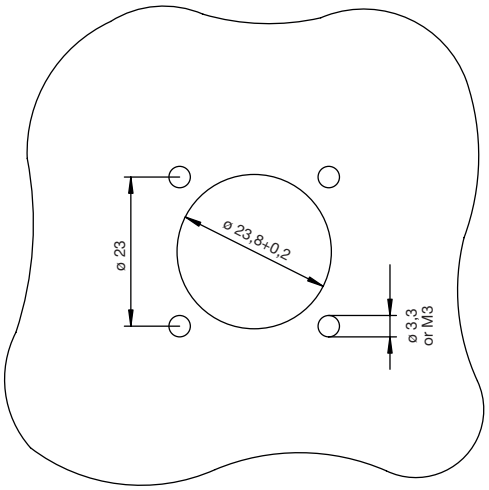


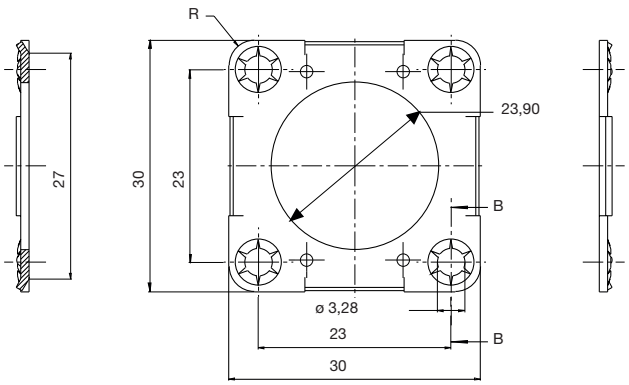

Code 4 blue

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

## Panel Cut Out

Flange for all Flange Receptacles




| Order No. |
|---|
| 066-8516-005 |

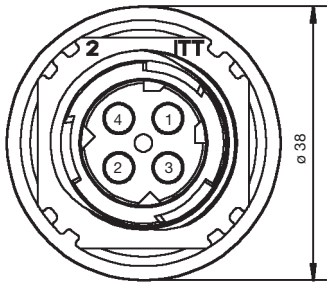
Note: Metal mounting flange for wall mounting of flange receptacle.

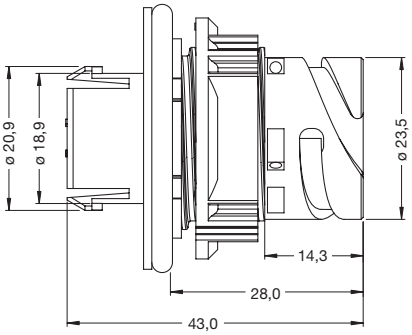
Dimensions shown in mm
Specifications and dimensions subject to change

# APD Jam Nut Receptacle, 4-way

## Jam Nut Receptacle, 4-way





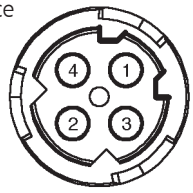

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0008 | APD-1CP-K2 | 1 | black (RAL 9005) |
| 121583-0009 | APD-2CP-K2 | 2 | grey (RAL 7036) |
| 121583-0010 | APD-3CP-K2 | 3 | green (RAL 6029) |
| 121583-0011 | APD-4CP-K2 | 4 | blue (RAL 5012) |

Packaging unit 100 pcs.
Pin crimp contacts see page 32.
Accessories, see pages 32 and 33.

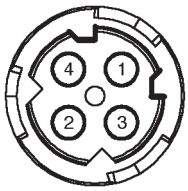
Note: Includes jam nut for wall thickness 1...4 mm.

## Coding, 4-way layouts

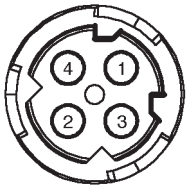
View on Mating Face



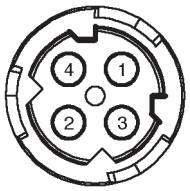
Code 1 black



Code 2 grey



Code 3 green

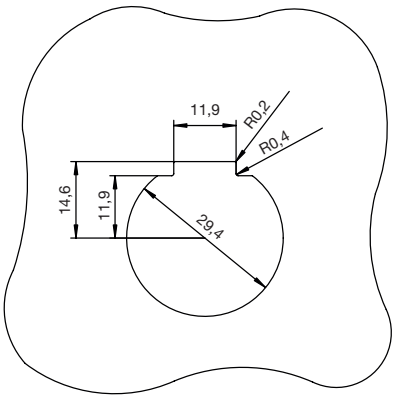


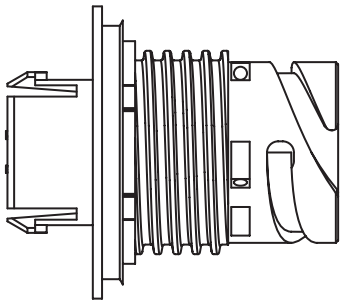
Code 4 blue

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

ø 20,9
□ 23

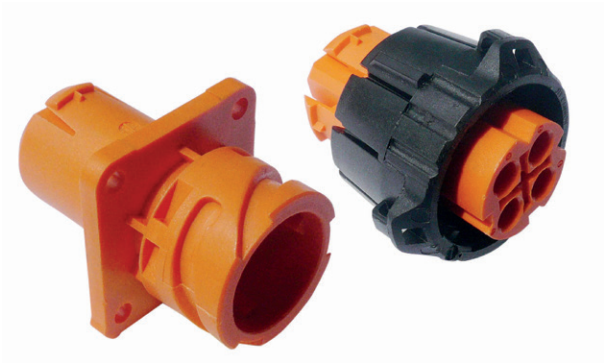
Wall Thickness: Standard Jam Nut: min. 1,0 / max. 4,0 mm  Special Jam Nut: min. 2,0 / max. 5,0 mm

## 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 Technical Data, 4-way High Voltage



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!

VDE 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 140 °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/s², 3 x 100h, RT and 120°C (ISO 15170-2)* |

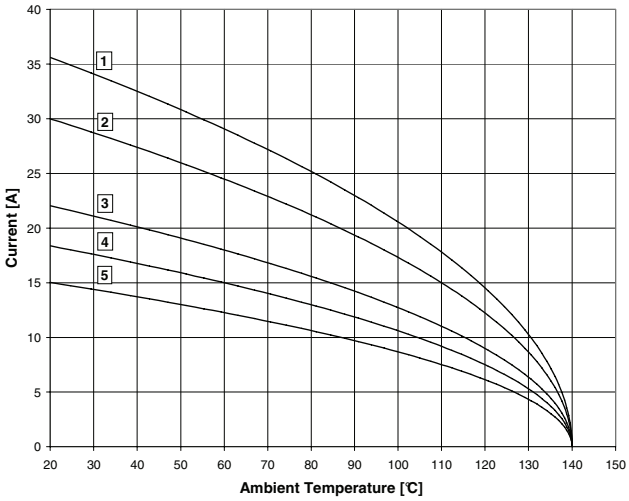
| Materials List | |
|---|---|
| **Housing Parts** | PBT GF |
| **Sealing Parts** | HNBR (alternative FKM) |
| **Coupling Nut** | PA 66 GF |
| **Contacts** | Copper Alloy, Sn or Au plated |

* Further information available upon request.

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Plug, 4-way High Voltage

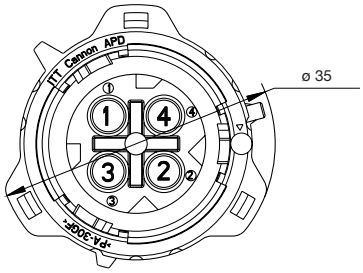
## Derating Curve

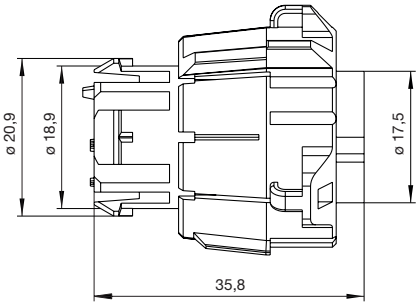



1: APK-_25-40/ 4,0mm²
2: APK-_25-25/ 2,5mm²
3: APK-_25-25/ 1,5mm²
4: APK-_25-10/ 1,0mm²
5: APK-_25-10/ 0,5mm²

## Plug, 4-way High Voltage





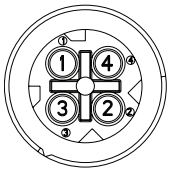




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0213 | APD-59BS-HV | 5 | orange (RAL 2003) |
| 121583-0214 | APD-69BS-HV | 6 | orange (RAL 2003) |

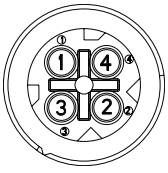
Packaging unit 100 pcs.
Socket crimp contacts see page 32.
Accessories, see pages 32 and 33.

## Coding, 4-way layouts High Voltage

View on Mating Face



Code 5 orange



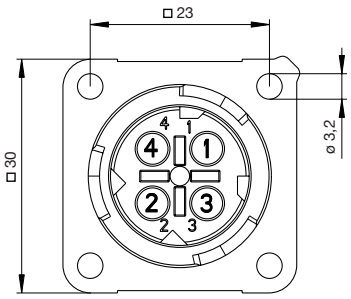
Code 6 orange

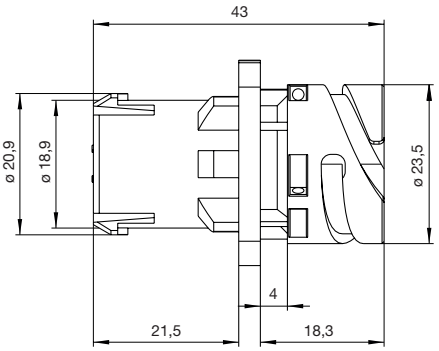
Note: The connectors offer both mechanical keying and visual coding by different colors.

# APD Flange Receptacle, 4-way High Voltage

## Flange Receptacle, 4-way High Voltage





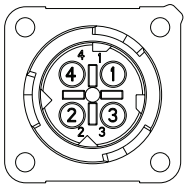




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0215 | APD-59AP-HV | 5 | orange (RAL 2003) |
| 121583-0216 | APD-69AP-HV | 6 | orange (RAL 2003) |

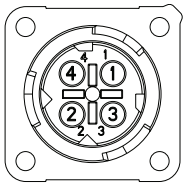
Packaging unit 100 pcs.
Pin crimp contacts see page 32.
Accessories, see pages 32 and 33.

## Coding, 4-way layouts High Voltage

View on Mating Face




Code 5 orange

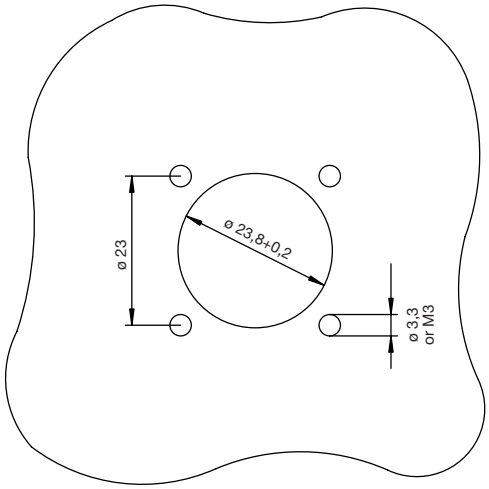


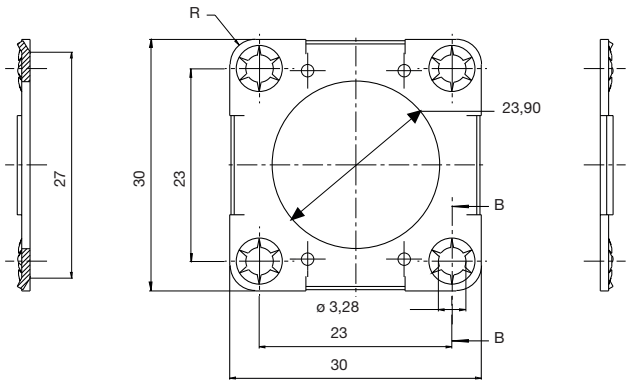

Code 6 orange

Note: The connectors offer mechanical keying.

## Panel Cut Out

Flange for all Flange Receptacles




| Order No. | |
|---|---|
| 066-8516-005 | Metal mounting flange for wall mounting of flange receptacle |

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Contacts, Accessories 4-way

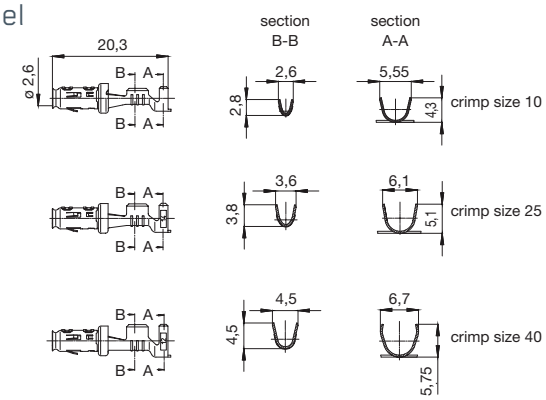
## Socket Crimp-Contacts Standard Tinned, 3000 contacts per reel

| Designation - Standard | Order No. |
|---|---|
| APK-SB25A10-002 (0,5 - 1,0 mm²) | 121668-0125 |
| APK-SB25A25-002 (1,5 - 2,5 mm²) | 121668-0126 |
| APK-SB25A40-002 (2,5 - 4,0 mm²) | 121668-0127 |

| Optional with Au-flash | Order No. |
|---|---|
| APK-SB25H10-002 (0,5 - 1,0 mm²) | 121668-0022 |
| APK-SB25H25-002 (1,5 - 2,5 mm²) | 121668-0128 |
| APK-SB25H40-002 (2,5 - 4,0 mm²) | 121668-0124 |

Note: For versions with silver plating please consult factory.





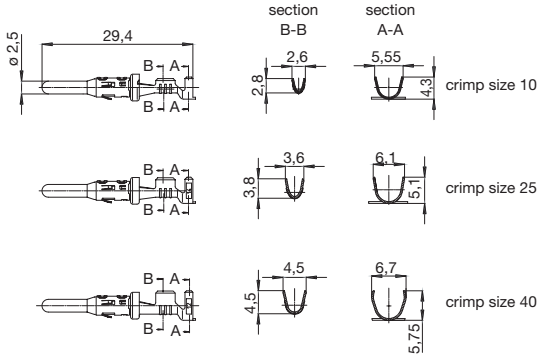

## Pin Crimp-Contacts Standard Tinned, 3000 contacts per reel

| Designation - Standard | Order No. |
|---|---|
| APK-PB25A10-002 (0,5 - 1 mm²) | 121668-0026 |
| APK-PB25A25-002 (1,5 - 2,5 mm²) | 121668-0027 |
| APK-PB25A40-002 (2,5 - 4,0 mm²) | 121668-0028 |

| Optional with Au-flash | Order No. |
|---|---|
| APK-PB25H10-002 (0,5 - 1 mm²) | 121668-0021 |
| APK-PB25H25-002 (1,5 - 2,5 mm²) | 121668-0029 |
| APK-PB25H40-002 (2,5 - 4,0 mm²) | 121668-0025 |

Note: For versions with silver plating please consult factory





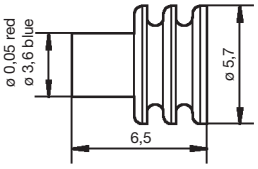

## Individual Wire Seals

For all versions 4-way

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

Note: Packaging unit 5000 pcs.





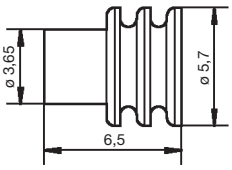

## Wire Filler

For all versions 4-way

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

Note: Packaging unit 5000 pcs.





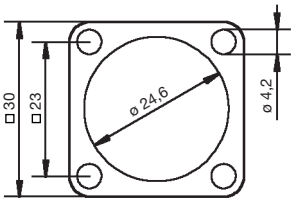

## Flange Gasket

For Flange Receptacle, 4-way

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

Note: Packaging unit 5000 pcs.





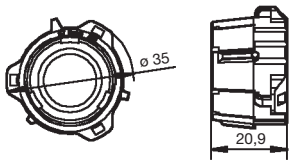
# APD Accessories, 4-way

## Sealing Cap for Receptacle

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

Packaging unit 100 pcs.



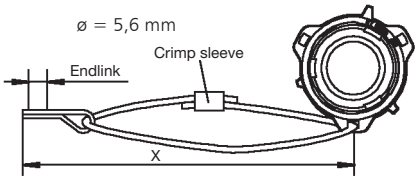



## APD-DP with rope, end link and eyelet

X = Total rope length upon request

| Order No. |
|---|
| 120110-0026* X~9cm |

* for other lengths please consult the factory

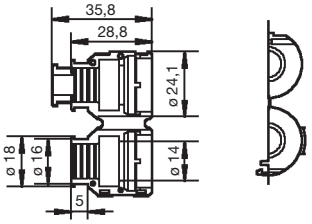



## Straight Endbell for Flex Tube

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

Packaging unit 100 pcs.



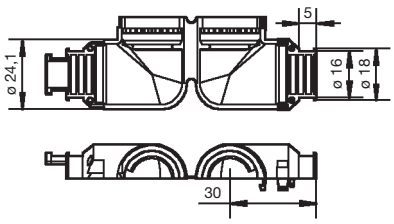



## 90° Endbell for Flex Tube

| 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.



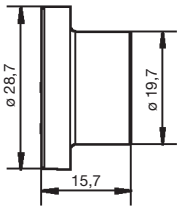



## Dust Cap for Plug

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

Packaging unit 100 pcs.



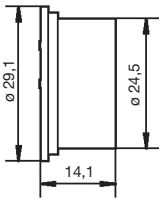



## Dust Cap for Receptacle

| 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

# APD Tooling, 4-way

## 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 Technical Data, 6/7-way



APD 6/7-way connectors are a derivate 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/s², 3 x 100h, RT and 120°C (ISO 15170-2)* |

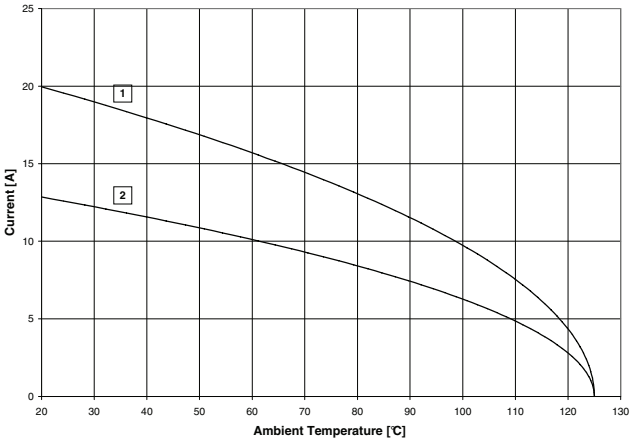
| Materials List | |
|---|---|
| **Housing Parts** | PBT GF |
| **Sealing Parts** | HNBR (alternative FKM) |
| **Coupling Nut** | PA 66 GF |
| **Contacts** | Copper Alloy, Sn, Ag or Au plated* |

* Further information available upon request.

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Plug, 6 /7-way

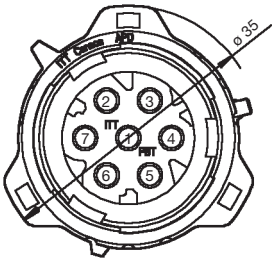
## Derating Curve

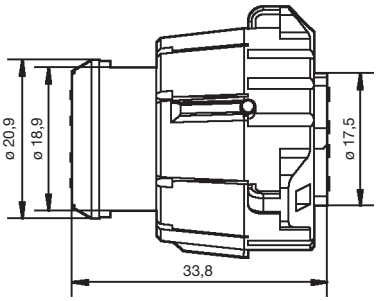



1: 1,5mm$^2$
2: 0,5mm$^2$

## 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



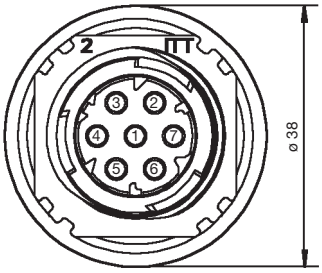

7-way

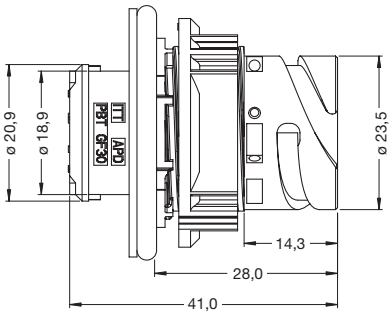
# APD Jam Nut Receptacle, 6/7-way

## 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) |

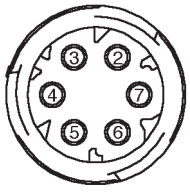
Packaging unit 100 pcs.

* Contact cavity 1 closed

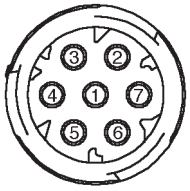
## Jam Nut Receptacle

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



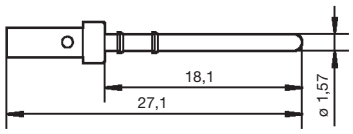

7-way

## Press-in Crimp Contact

For Flange and
Jam Nut Receptacle



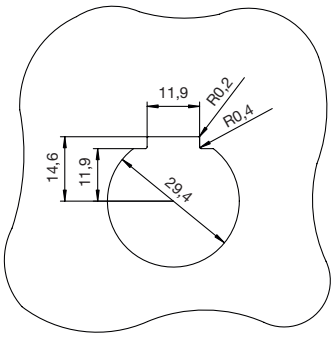
| Order No. |
|---|
| 330-8672-021 (tinned) (0,75 - 1,5 mm$^2$) |
| 330-8672-019 (tinned) (0,35 - 0,75 mm$^2$) |
| with gold flash plating upon request |



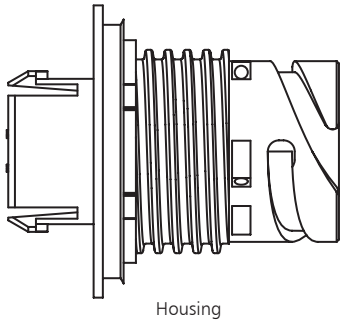

Packaging unit 100 pcs.
Note: Press-in Crimp Contacts are not removable after insertion.

## Panel Cut Out

Flange for all Flange Receptacles



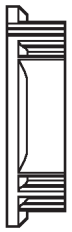

Wall Thickness: Standard Jam Nut:
min. 1,0 / max. 4,0 mm Special
Jam Nut: min. 2,0 / max. 5,0 mm



Housing



O-ring



Jam Nut

## Jam Nut, special

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

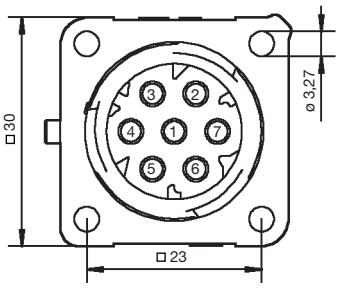
Dimensions shown in mm
Specifications and dimensions subject to change

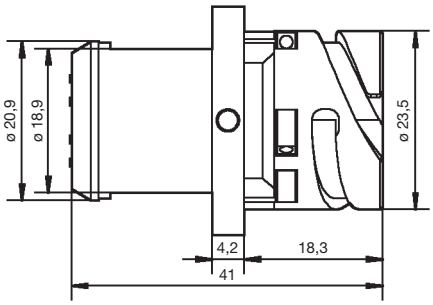
# APD Flange Receptacle, 6/7-way

## 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

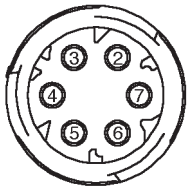
## Flange Receptacle

6/7-way for crimp press-in contacts

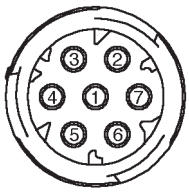
| | Order No. | Designation | Code | Color |
|---|---|---|---|---|
| 6-way* | 120110-0020 | APD-1AP6-EP | 1 | black (RAL 9005) |
| 7-way | 121583-0205 | APD-1AP7-EP | 1 | black (RAL 9005) |

Packaging unit 100 pcs.
* Contact cavity 1 closed

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



6-way



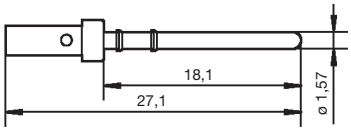
7-way

## Press-in Crimp Contact

For Flange and
Jam Nut Receptacle



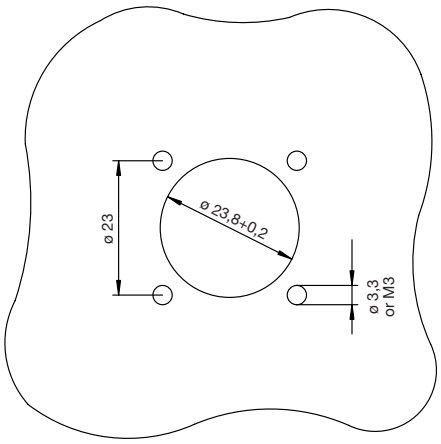
| Order No. |
|---|
| 330-8672-021 (tinned) (0,75 - 1,5 mm²) |
| 330-8672-019 (tinned) (0,35 - 0,75 mm²) |
| with gold flash plating upon request |

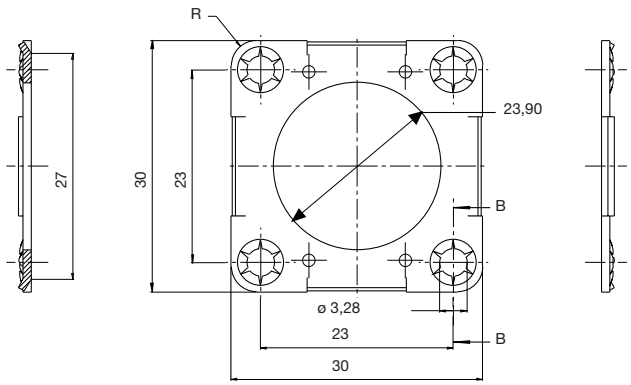



Packaging unit 100 pcs.
Note: Press-in Crimp Contacts are not removable after insertion.

## Panel Cut Out

Flange for all Flange Receptacles




Dimensions shown in mm
Specifications and dimensions subject to change

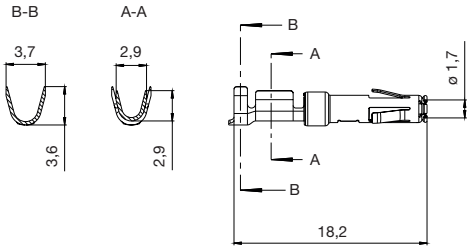
# APD Contacts, Accessories, 6/7-way

## Socket Crimp-Contacts 1,6 mm Standard Tinned

3000 contacts per reel

| Order No. |
|---|
| 192900-0001 (0,5 - 1,5 mm$^2$) |
| *192900-0003 Loose Piece Bulk Pack |

* Crimp Tool - 121586-5237

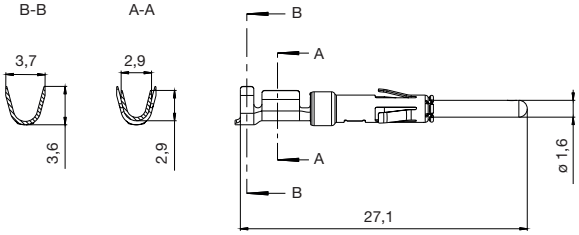



## Pin Crimp-Contacts 1,6 mm Standard Tinned

3000 contacts per reel

| Order No. |
|---|
| 192900-0000 * (0,5 - 1,5 mm$^2$) |
| 192900-0002 Loose Piece Bulk Pack |

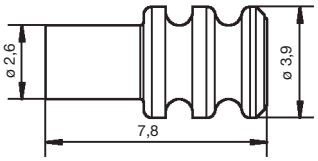
* Crimp Tool - 112108-0014




## 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 |

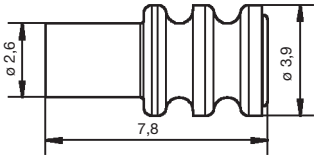





## Wire Filler

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



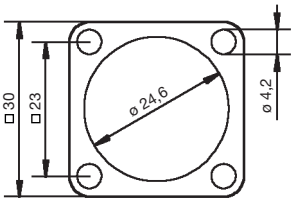



## Gasket for all Flange Receptacles

| 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

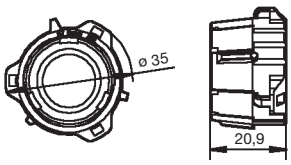
# APD Accessories, 6/7-way

## Sealing Cap for Receptacle

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

Packaging unit 100 pcs.



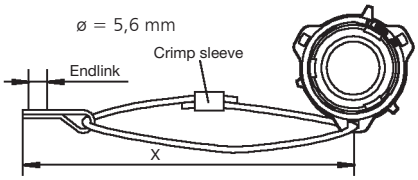



## APD-DP with rope, end link and eyelet

X = Total rope length upon request

| Order No. |
|---|
| 120110-0026* X~9cm |

* for other lengths please consult the factory

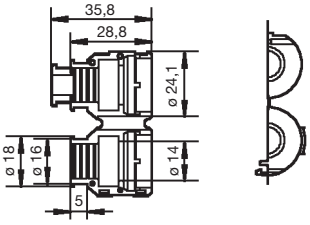



## Straight Endbell for Flex Tube

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

Packaging unit 100 pcs.



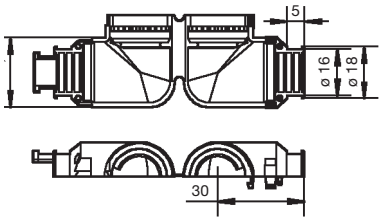



## 90° Endbell for Flex Tube

| 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.



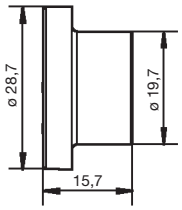



## Dust Cap for Plug

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

Packaging unit 100 pcs.



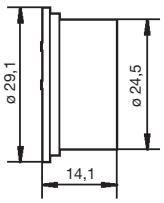



## Dust Cap for Receptacle

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

Packaging unit 100 pcs.





# APD Tooling for 6/7-way

## 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 and Pin | Designation (to be mentioned on order) | Order No. |
|---|---|---|
| 192900-0001 (socket) (0,75 - 1,5 $mm^2$) | WWZ-Mecal-16-18-EVS | 121586-5217 |
| 192900-0000 (pin) (0,75 - 1,5 $mm^2$) | WWZ-Mecal-16-18-EVS | 121586-5217 |

## Contact Extraction Tool

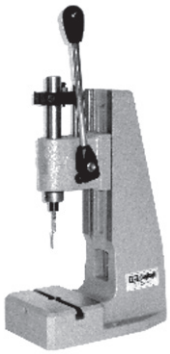


| Description | Order No. |
|---|---|
| Trident Extraction Tool | 192922-1450 |

Wire Insulation Stripping length: 4,5 mm

## 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. |
|---|---|
| Ragged Tool | 192990-7600 |

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Sensor Connectors



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.

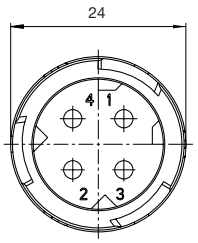
The offering includes several basic versions / variations for pressure sensoring and options for flow solder and crimp contacts.

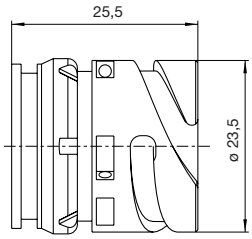
## Typical Applications include:

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

## Sensor Connectors, Style 1





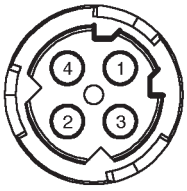




| Order No. | Code | Contact Cavity closed no. | Color |
|---|---|---|---|
| 248-8653-031 | 1 | 3 + 4 | black (RAL 9005) |
| 248-8653-053 | 2 | 3 + 4 | grey (RAL 7036) |
| 248-8653-105 | 1 | 4 | black (RAL 9005) |
| 248-8653-106 | 1 | - | black (RAL 9005) |
| 248-8653-134 | 4 | 2 + 4 | blue (RAL 5012)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

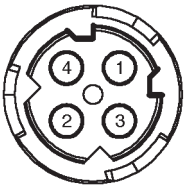
Consult factory for customized versions.
Note: Mate with APD 4-way plug.

## Coding, Basic layouts*

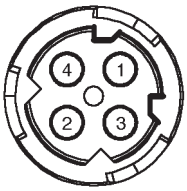
View on Mating Face



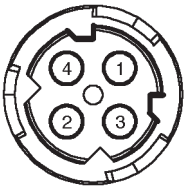

Code 1 black




Code 2 grey




Code 3 green

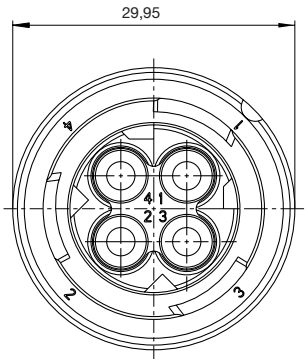


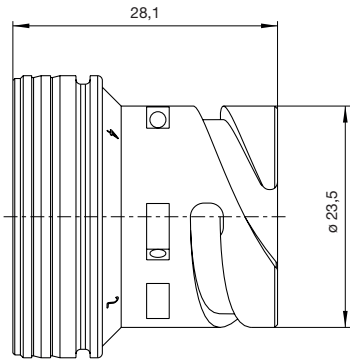

Code 4 blue

Note: The connectors offer both mechanical keying and visual coding by different colors.
* Versions with closed cavities are not shown.

## Sensor Connectors, Style 2





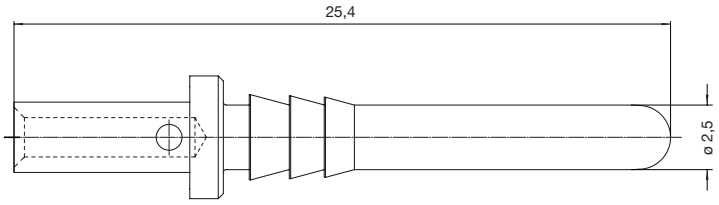

* Pictures and drawings shown are examples.

### 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 $mm^2$ |

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Technical Data, 19-way



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:

- 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** | 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) |

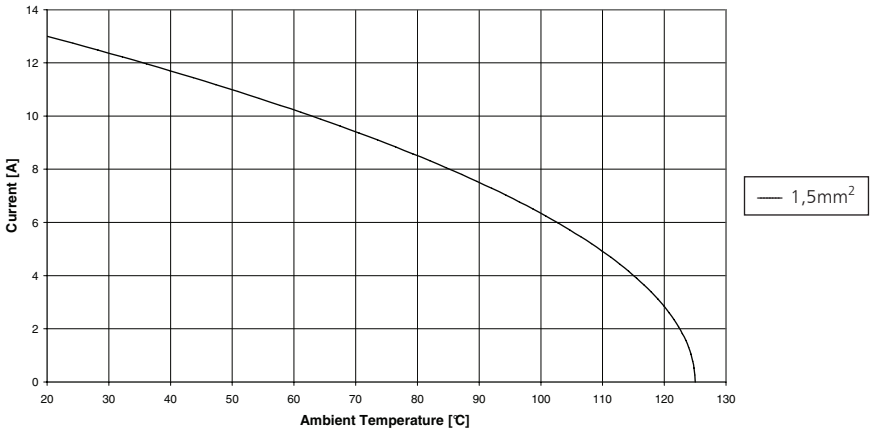
| Environmental Data (acc. ISO 15170) | |
|---|---|
| **Temperature Range** | -40 °C up to 125 °C (ISO 15170-2, Sec. 6.4) |
| **Humidity Range** | up to 95 % r.h. (ISO 15170-2, Sec. 6.4) |
| **Sealing** | IP 67 + IP 69k (DIN EN 60529) |
| **Salt Spray** | 96 h, 35 °C (ISO 15170-2, Sec. 6.2) |
| **Industrial 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/s², 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.

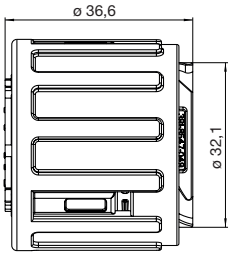
# APD Plug, 19-way

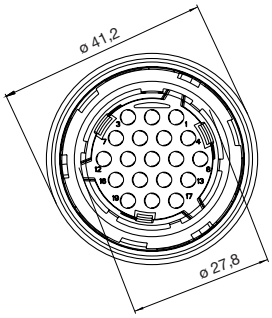
## Derating Curve




## Plug, 19-way



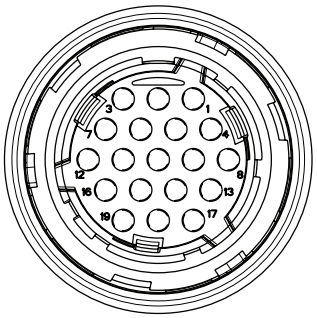


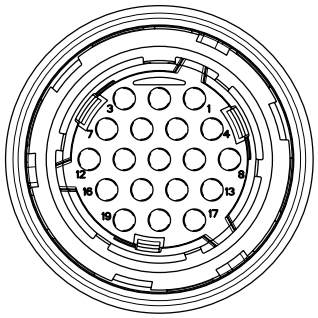

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0119 | APD-1BS19S | 1 | black (RAL 9005) |
| 121583-0121 | APD-2BS19S | 2 | grey (RAL 7036) |
| 121583-0123 | APD-3BS19S | 3 | green (RAL 6029 |
| 121583-0125 | APD-4BS19S | 4 | blue (RAL 5012) |

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.

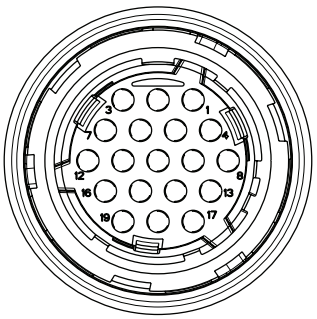
## Coding, 19-way layouts



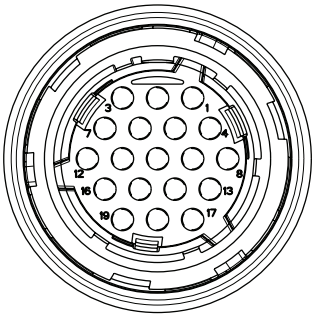
Code 1 black



Code 2 grey



Code 3 green

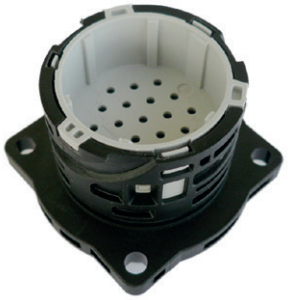


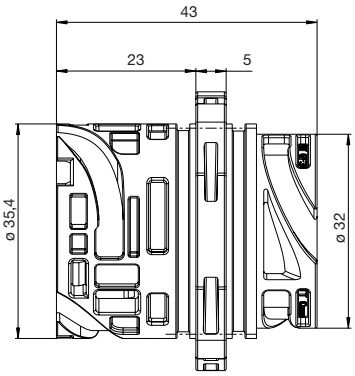
Code 4 blue

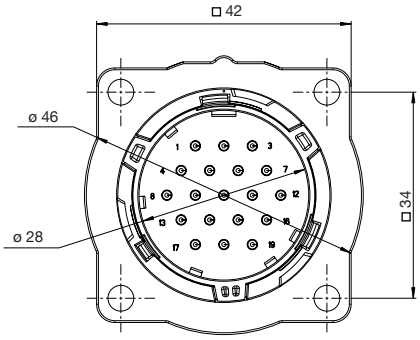
Dimensions shown in mm
Specifications and dimensions subject to change

# APD Flange Receptacle, 19-way

## Flange Receptacle, 19-way





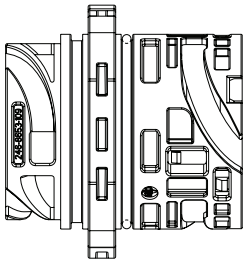

| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0120 | APD-1AP19S | 1 | black (RAL 9005) |
| 121583-0122 | APD-2AP19S | 2 | grey (RAL 7036) |
| 121583-0124 | APD-3AP19S | 3 | green (RAL 6029) |
| 121583-0126 | APD-4AP19S | 4 | blue (RAL 5012) |

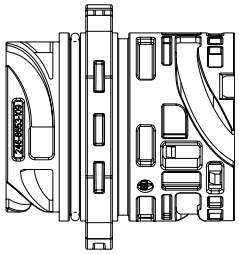
Version with o-ring for rear panel mounting:

| 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:

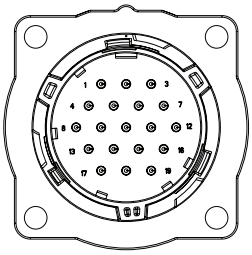
| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0128 | APD-1AP19S-F | 1 | black (RAL 9005) |
| 121583-0130 | APD-2AP19S-F | 2 | grey (RAL 7036) |
| 121583-0132 | APD-3AP19S-F | 3 | green (RAL 6029 |
| 121583-0134 | APD-4AP19S-F | 4 | blue (RAL 5012) |

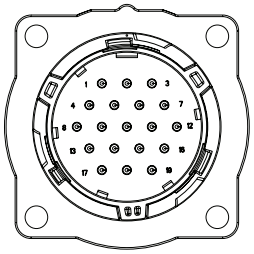


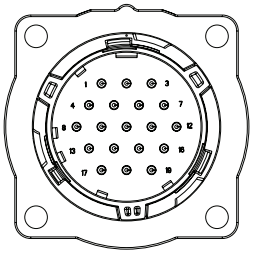


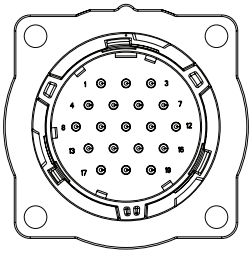
Packaging unit 50 pcs.
Note: Each packaging unit includes one release tool.
Pin crimp contacts see page 49.
Accessories, see pages 50, 51, and 52.

## Coding, 19-way layouts

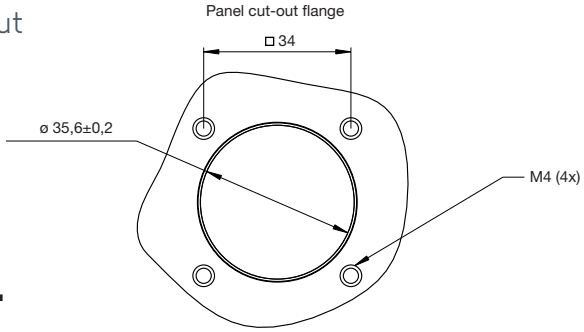

Code 1 black


Code 2 grey


Code 3 green


Code 4 blue

## Panel Cut Out

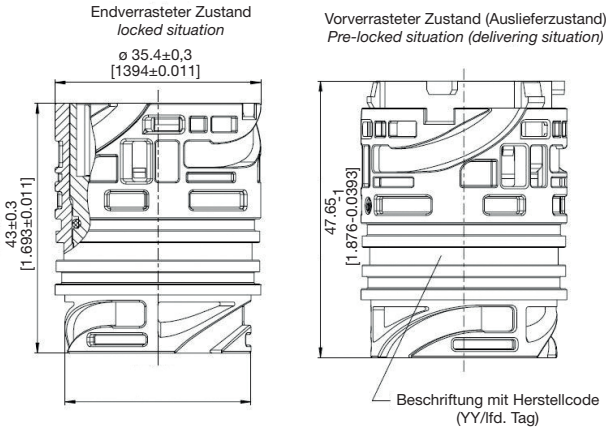



Dimensions shown in mm
Specifications and dimensions subject to change

# APD Wire-to-Wire Receptacle, 19-way

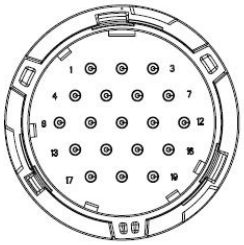
## Wire-to-Wire Receptacle, 19-way



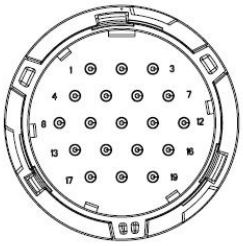



| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0135 | APD-1BP19S | 1 | black (RAL 9005) |
| 121583-0136 | APD-2BP19S | 2 | grey (RAL7036) |

## Coding, 19-way layouts



Code 1 black

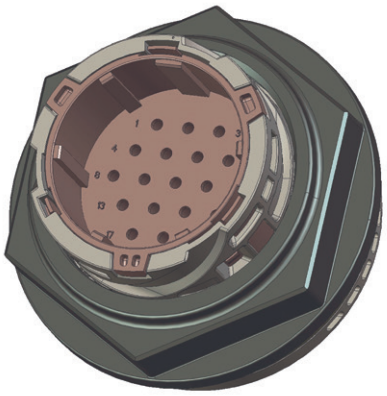


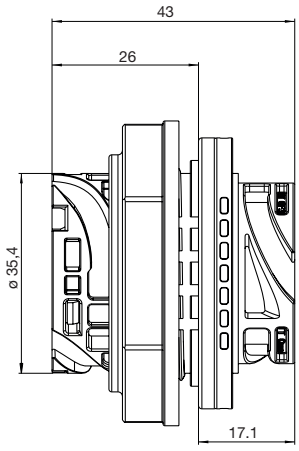
Code 2 grey

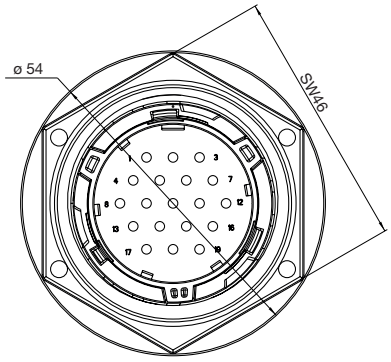
Dimensions shown in mm
Specifications and dimensions subject to change

# APD Jam Nut Receptacle, 19-way

## Jam Nut Receptacle, 19-way





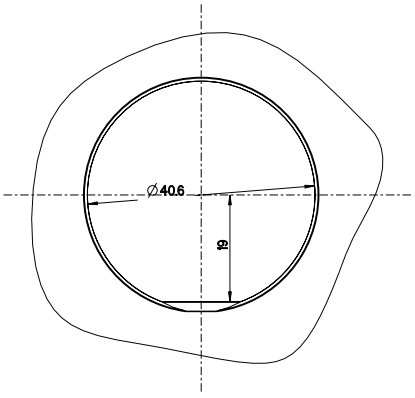

| Order No. | Designation | Code | Color |
|---|---|---|---|
| Consult Factory | APD-1CP19S | 1 | black (RAL 9005) |
| Consult Factory | APD-2CP19S | 2 | grey (RAL 7036) |
| Consult Factory | APD-3CP19S | 3 | green (RAL 6029 |
| Consult Factory | APD-4CP19S | 4 | blue (RAL 5012) |

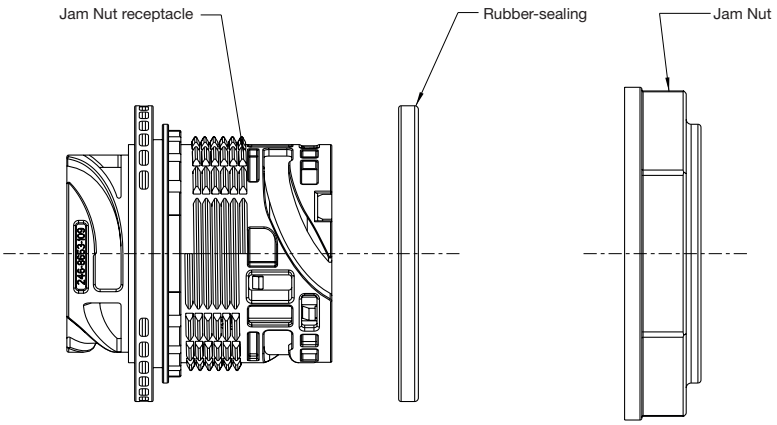
Packaging unit 50 pcs.
Note: Each packaging unit includes one release tool.
Pin crimp contacts see page 49.
Accessories, see pages 50, 51, and 52.

## Coding, 19-way layouts

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

## Panel Cut Out



# Contacts / Seals, 19-way

## 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 mm² | APK-SA16A07-002 | 121668-0221 | APK-SA16A07-002-B | 121668-0274 |
| | | 0,75 - 1,5 mm² | APK-SA16A15-002 | 121668-0202 | APK-SA16A15-002-B | 121668-0276 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-SA16G07-002 | 121668-0270 | APK-SA16G07-002-B | 121668-0278 |
| | | 0,75 - 1,5 mm² | APK-SA16G15-002 | 121668-0272 | APK-SA16G15-002-B | 121668-0280 |
| Pin contacts | tin | 0,35 - 0,75 mm² | APK-PA16A07-002 | 121668-0252 | APK-PA16A07-002-B | 121668-0275 |
| | | 0,75 - 1,5 mm² | APK-PA16A15-002 | 121668-0253 | APK-PA16A15-002-B | 121668-0277 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-PA16G07-002 | 121668-0269 | APK-PA16G07-002-B | 121668-0279 |
| | | 0,75 - 1,5 mm² | APK-PA16G15-002 | 121668-0271 | APK-PA16G15-002-B | 121668-0281 |

## Press-In Contacts

| Contacts (stamped & formed) | Plating | Crimp Range | Reeled | | Single piece | |
|---|---|---|---|---|---|---|
| | | | Designation | Part number | Designation | Part number |
| Pin contacts | tin | 0,3 - 0,6 mm² | - | - | APK-PA16A06-E | Consult Factory |
| | gold (0,8 µm) | 0,3 - 0,6 mm² | - | - | APK-PA16G06-E | Consult Factory |
| | | 0,5 - 1,0 mm² | - | - | APK-PA16G10-E | Consult Factory |
| | | 1,0 - 1,5 mm² | - | - | APK-PA16G15-E | Consult Factory |

## Individual Wire Seals / Blind Seals

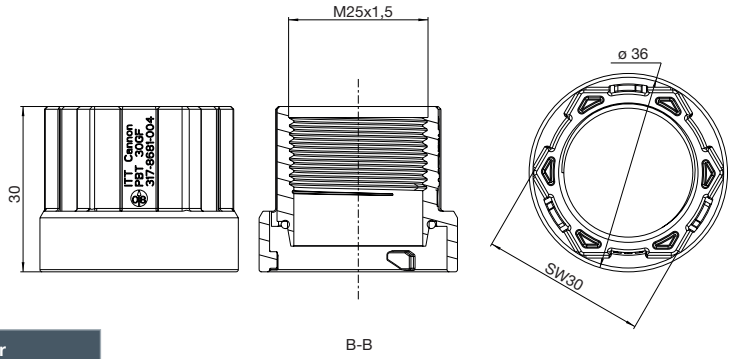
| Description | Insulation Diameter | Color | Part number |
|---|---|---|---|
| Single Wire Sealing | 1,2 - 1,6 mm | Red | 121667-0024 |
| | 1,4 - 2,0 mm | Grey | 121667-0022 |
| | 1,9 - 2,1 mm | Yellow | 121667-0023 |
| Blind Seal | 1,4 - 2,0 mm | White | 121667-0025 |

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Accessories, 19-way

## Endbell, 19-way






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

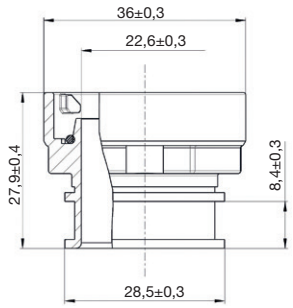
## Endbell Adapter, 19-way

For the use of standard 90° / Straight conduit accessories

| Order No. |
|---|
| 044-8597-004* |

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

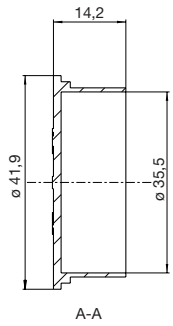





## Dust Cap for Plug

| Order No. |
|---|
| 025-8636-053 |

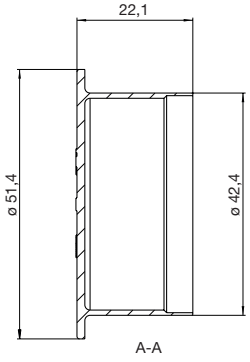





## Dust Cap for Receptacle

| Order No. |
|---|
| 025-0487-000 |

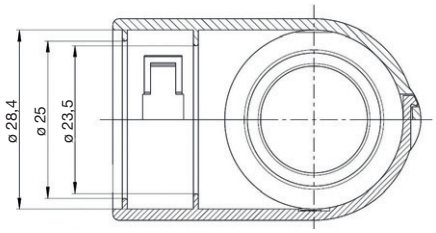


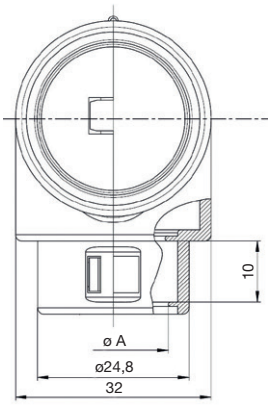



Dimensions shown in mm
Specifications and dimensions subject to change

## 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 |

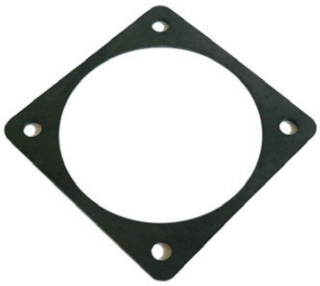
Packaging unit 100 pcs.

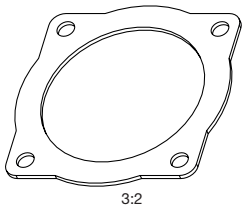
Dimensions shown in mm
Specifications and dimensions subject to change

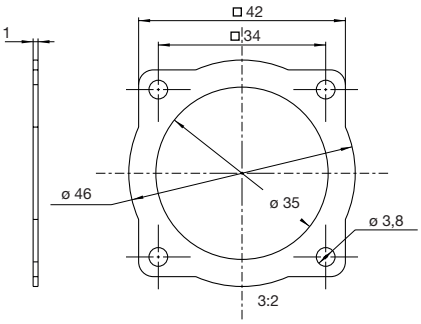
# Accessories, 19-way

## Flange Gasket, 19-way

| Order No. |
|---|
| 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.



## Clamping Bracket

| 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.

# Tooling, 19-way

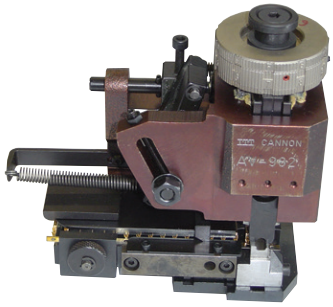
## Hand Crimp Tool for Stamped and Formed Contacts

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



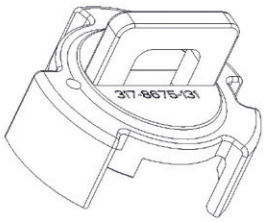
## Mini Applicator for Stamped and Formed Contacts

| 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 |

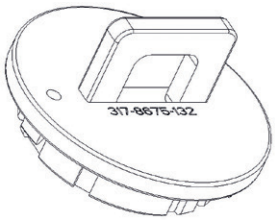


## Support Tools, 19-way

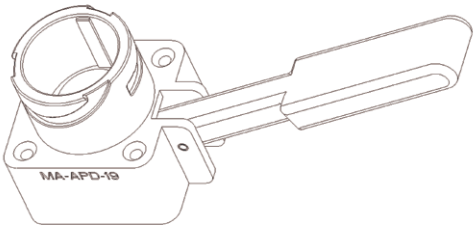
| Designation | Order No.* |
|---|---|
| Release tool, secondary lock, plug | 121586-5235 |
| Release tool, secondary lock, receptacle | 121586-5234 |




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




Locking tool for 19-way plug connectors




Dimensions shown in mm
Specifications and dimensions subject to change

# Tooling, 19-way

## Hand Crimp Tool for Press-in Contacts

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

| Locator | Order No. |
|---|---|
| M225201/1-05 | 95-0001-507 |



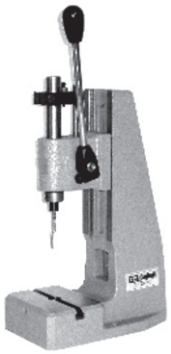
## Automatic Crimp Tooling for Press-in Contacts

| 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 Technical Data, 37-way*





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. Derived from 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/s², 3 x 100h, RT and 120°C (ISO 15170-2)* |

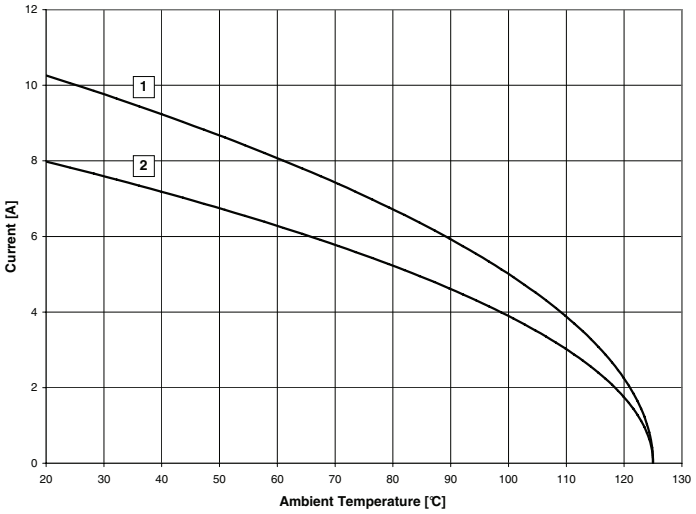
| Materials List | |
|---|---|
| **Housing Parts** | PA 66 GF |
| **Sealing Parts** | FKM (alternative FVMQ) |
| **Coupling Nut** | PA 6 GF |
| **Contacts** | Copper Alloy, Au or Sn plated* |

* Further information available upon request.

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Plug, 37-way

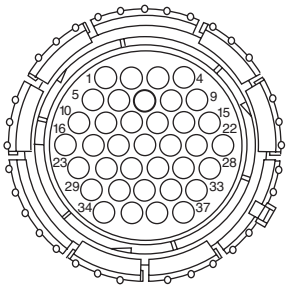
## Derating Curve

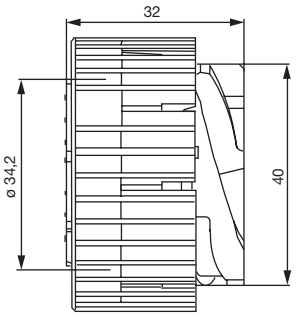


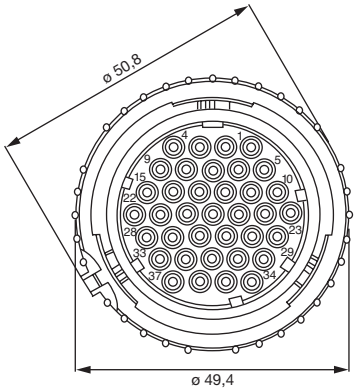

1: 1,0mm²
2: 0,75mm²

## Plug, 37-way





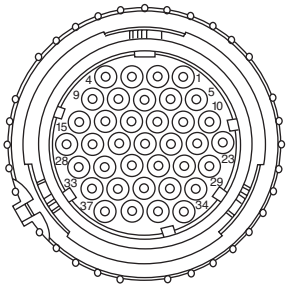




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0058 | APD-1BS37 | 1 | black (RAL 9005) |

Packaging unit 100 pcs.
Socket crimp contacts see page 58.
Accessories, see pages 58 and 59.

## Coding 37-way layout

View on Mating Face

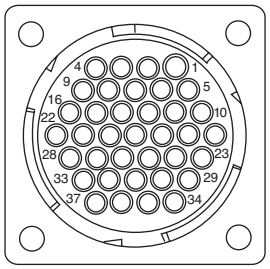


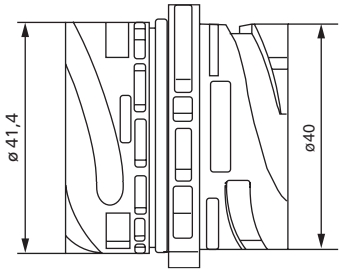

Note: Additional coding on demand.

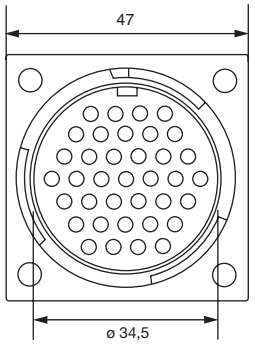
# APD Flange Receptacle, 37-way

## Flange Receptacle, 37-way





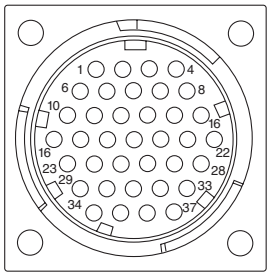

| Order No. | Designation | Code | Color | Comment |
|---|---|---|---|---|
| 249-8619-017 | APD-1AP37-R | 1 | black (RAL 9005 | with O-ring |
| 248-8653-026 | APD-1AP37 | 1 | black (RAL 9005 | without O-ring |

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

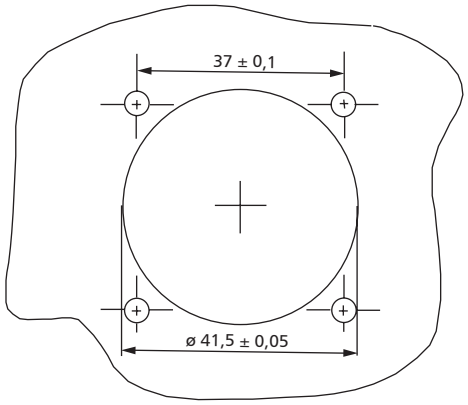
View on Mating Face

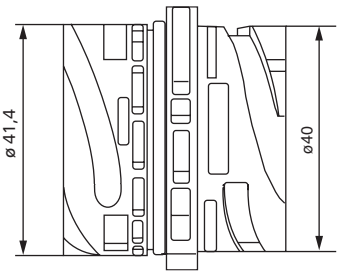



Note: Additional coding on demand.

## Panel Cut Out

Flange for all Flange Receptacles




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

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Contacts / Accessories, 37-way

## 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 mm² | APK-SA16A07-002-C | 121668-0220 |
| | | 0,75 - 1,50 mm² | APK-SA16A15-002-C | 121668-0222 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-SA16G07-002-C | 121668-0266 |
| | | 0,75 - 1,50 mm² | APK-SA16G15-002-C | 121668-0268 |
| Pin contacts | tin | 0,35 - 0,75 mm² | APK-PA16A07-002-C | 121668-0254 |
| | | 0,75 - 1,50 mm² | APK-PA16A15-002-C | 121668-0255 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-PA16G07-002-C | 121668-0265 |
| | | 0,75 - 1,50 mm² | APK-PA16G15-002-C | 121668-0267 |

## Press-In Contacts (machined)

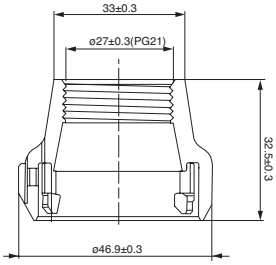
| Contacts (stamped & formed) | Plating | Crimp Range | Reeled 5000 pcs/reel | |
|---|---|---|---|---|
| | | | Designation | Part number |
| Pin contacts | tin | 0,30 - 0,60 mm² | APK-PA16A06-E | 330-8674-020 |
| | gold (0,8 µm) | 0,50 - 1,00 mm² | APK-PA16G10-E | 330-8674-025 |

## 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 | | White | 121667-0025 |

## Endbell, 37-way

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

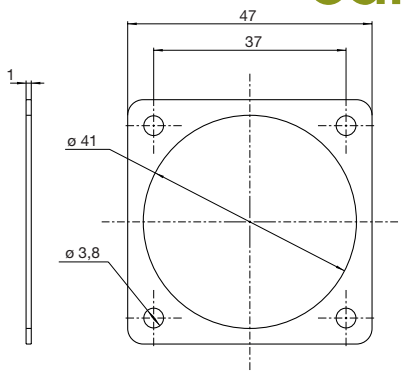


# APD Accessories, 37-way

## Flange Gasket

| Order No. |
|---|
| 075-8566-004 |

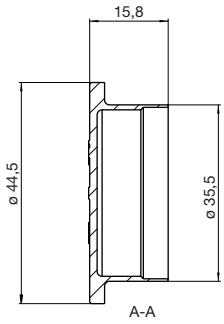





## Dust Cap for Plug

| Order No. |
|---|
| 025-8636-037 |





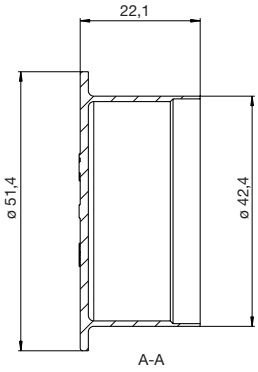




## Dust Cap for Receptacle

| Order No. |
|---|
| 025-8636-053 |





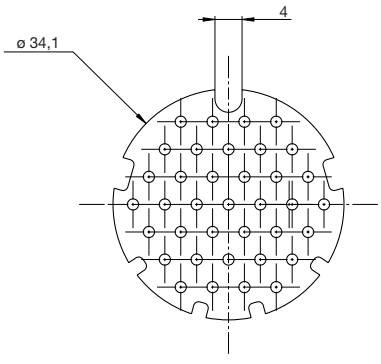


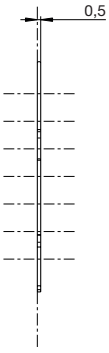


## Alignment Disc 37-way

For 37-way Flange Receptacle

| Order No. |
|---|
| 052-8509-004 |




Dimensions shown in mm
Specifications and dimensions subject to change

# APD Tooling, 37-way

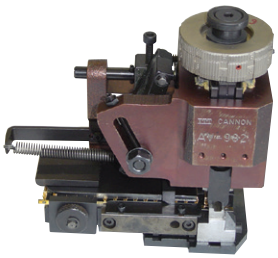
## Hand Crimp Tool for Stamped and Formed Contacts

| 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 |



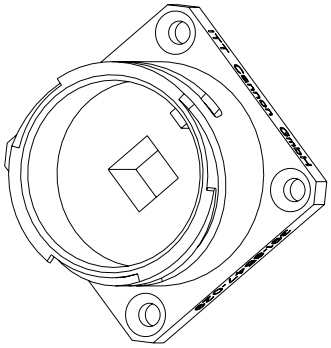
## Automatic Crimp Tooling for Press-in Contacts

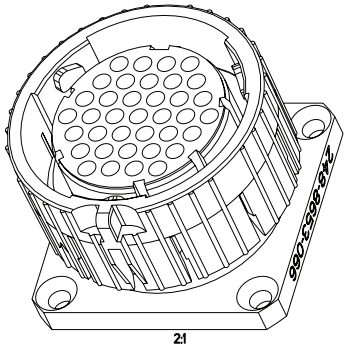
| Designation | Order No. | Description |
|---|---|---|
| 0,35 - 0,75 $mm^2$ | 121586-5131 | WWZ-20-100-APK16-07-002 |
| 0,75 - 1,5 $mm^2$ | 121586-5132 | WWZ-20-100-APK16-15-002 |



## 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 |

# APD Tooling, 37-way

## Hand Crimp Tool for Press-in Contacts

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

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



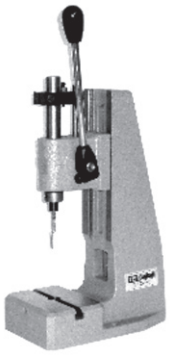
## Automatic Crimp Tooling for Press-in Contacts

| 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 |



Dimensions shown in mm
Specifications and dimensions subject to change

# APD Technical Data, 51-way*



The APD 51-way connector offers the same features as the 37-way solution. With a 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. |

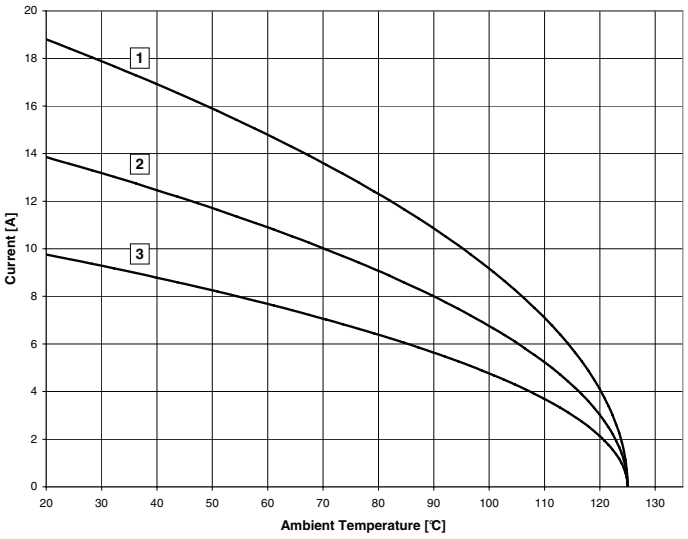
| Mechanical Data | |
|---|---|
| **Durability** | 40 Mating Cycles |
| **Coupling Torque** | 4,5 Nm max. |
| **Static Load, free connector** | 250 N axial, 150 N lat. (ISO 15170-2, Sec. 4.5) |
| **Dynamic Impact** | 2 J (40mm- ball- drop- test, height 800mm) |

| 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$(m/s^2)^2$/Hz, 3 x 24h, RT |

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

* Further information available upon request.

## Derating Curve

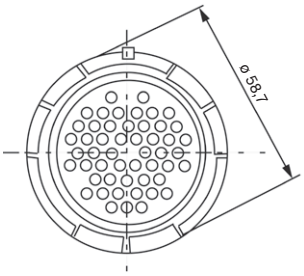


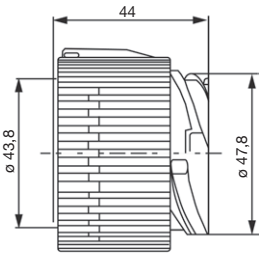

1: 1,5mm$^2$
2: 0,75mm$^2$
3: 0,35mm$^2$

# APD Plug, 51-way

## Plug, 51-way, Secondary Lock Version





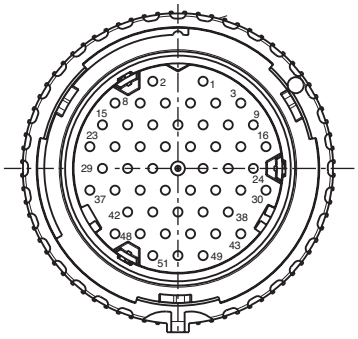




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0187 | APD-1BP51SN | 1 | green (RAL 6018) |
| 121583-0188 | APD-2BP51SN | 2 | yellow (RAL 1018) |
| 121583-0189 | APD-3BP51SN | 3 | brown (RAL 3009) |
| 121583-0190 | APD-4BP51SN | 4 | purple (RAL 4001) |

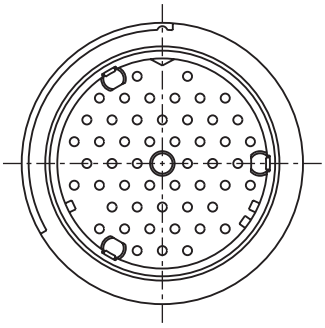
Packaging unit 100 pcs.
Pin crimp contacts see page 69.
Accessories, see page 70.

## Coding 51-way layout

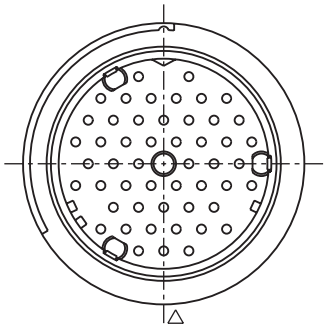
View on Mating Face



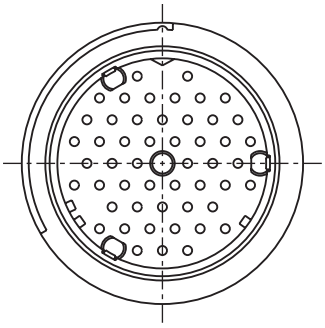

Code 1 green



Code 2 yellow



Code 3 brown



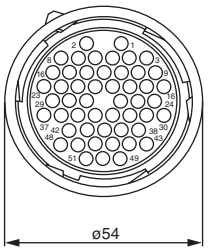
Code 4 purple

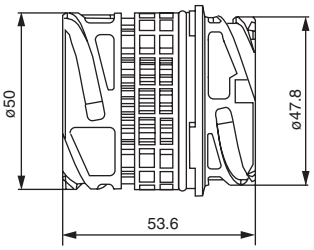
Note: The connectors offer both mechanical keying and visual coding by different colors.

# APD Snap-In Receptacle, 51-way

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





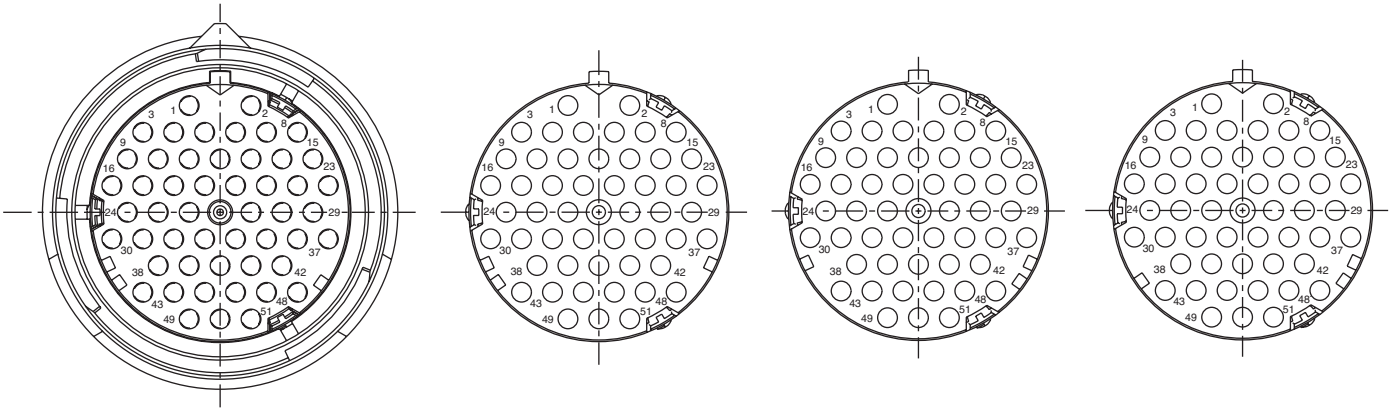




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0091 | APD-1SS51S | 1 | green (RAL 6018) |
| 121583-0092 | APD-2SS51S | 2 | yellow (RAL 1018) |
| 121583-0093 | APD-3SS51S | 3 | brown (RAL 3009) |
| 121583-0094 | APD-4SS51S | 4 | purple (RAL 4001) |

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

## Coding 51-way layout

View on Mating Face



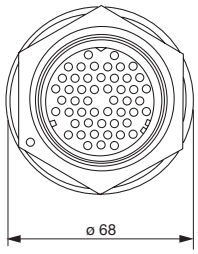
Code 1 green | Code 2 yellow | Code 3 brown | Code 4 purple

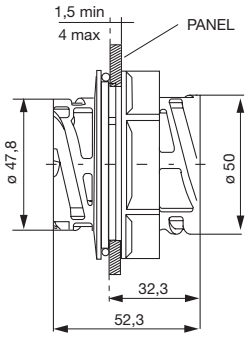
Note: The connectors offer both mechanical keying and visual coding by different colors.
Snap-In dimension on demand 3-D-image available.

# APD Jam Nut Receptacle, 51-way

## Jam Nut Receptacle, 51-way, Secondary Lock Version





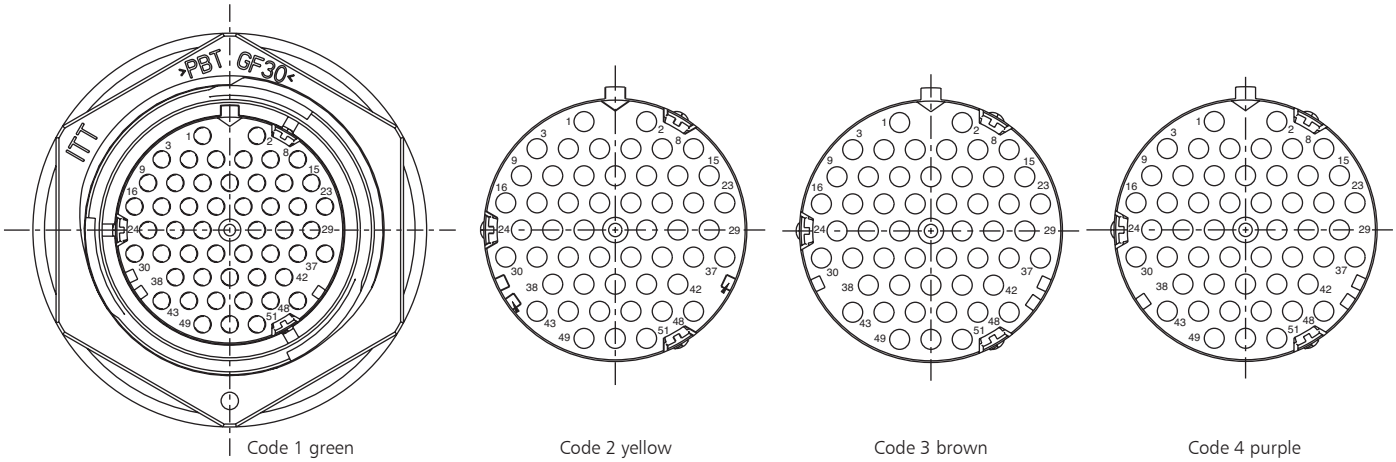




| Order No. | Designation | Code | Color |
|---|---|---|---|
| 121583-0095 | APD-1CS51S | 1 | green (RAL 6018) |
| 121583-0096 | APD-2CS51S | 2 | yellow (RAL 1018) |
| 121583-0097 | APD-3CS51S | 3 | brown (RAL 3009) |
| 121583-0098 | APD-4CS51S | 4 | purple (RAL 4001) |

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

## Coding 51-way layout

View on Mating Face

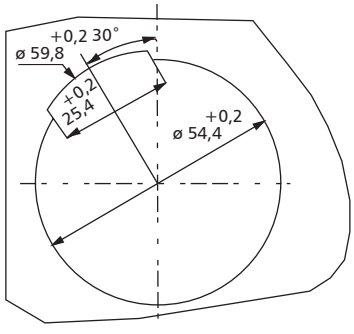



Code 1 green | Code 2 yellow | Code 3 brown | Code 4 purple

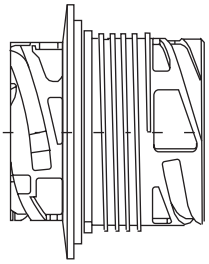
Note: The connectors offer both mechanical keying and visual coding by different colors.

## Panel Cut Out

Piece Parts / Assembly Instruction



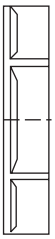

Wall Thickness
Standard: min. 1,5 / max. 4,0 mm



Housing



O-Ring



Jam Nut

# APD Contacts / Seals, 51-way

## 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 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 mm² | APK-SA16A07-002 | 121668-0221 | APK-SA16A07-002-B | 121668-0274 |
| | | 0,75 - 1,5 mm² | APK-SA16A15-002 | 121668-0202 | APK-SA16A15-002-B | 121668-0276 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-SA16G07-002 | 121668-0270 | APK-SA16G07-002-B | 121668-0278 |
| | | 0,75 - 1,5 mm² | APK-SA16G15-002 | 121668-0272 | APK-SA16G15-002-B | 121668-0280 |
| Pin contacts | tin | 0,35 - 0,75 mm² | APK-PA16A07-002 | 121668-0252 | APK-PA16A07-002-B | 121668-0275 |
| | | 0,75 - 1,5 mm² | APK-PA16A15-002 | 121668-0253 | APK-PA16A15-002-B | 121668-0277 |
| | gold (0,8 µm) | 0,35 - 0,75 mm² | APK-PA16G07-002 | 121668-0269 | APK-PA16G07-002-B | 121668-0279 |
| | | 0,75 - 1,5 mm² | APK-PA16G15-002 | 121668-0271 | APK-PA16G15-002-B | 121668-0281 |

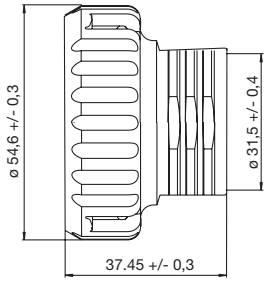
### Individual Wire Seals / Blind Seals

| 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 | - | White | 121667-0025 |

# APD Accessories, 51-way

## Endbell, 51-way






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

Dimensions shown in mm
Specifications and dimensions subject to change

Packaging unit 100 pcs.

# APD Tooling, 51-way

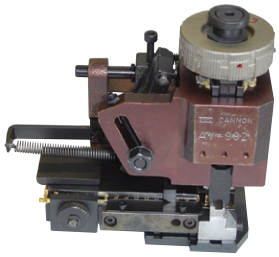
## Hand Crimp Tool for Stamped and Formed Contacts

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

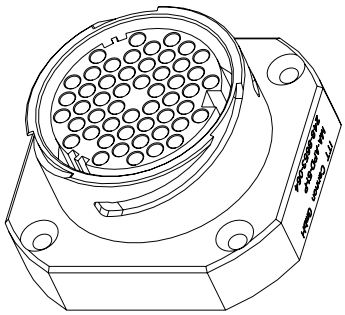


## Mini Applications for Stamped and Formed Contacts

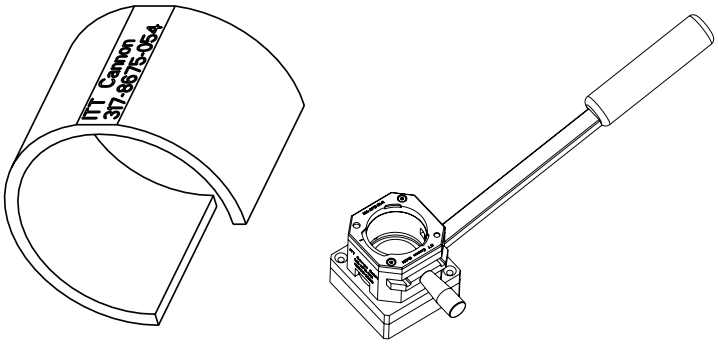
| Contact | Order No. | Designation |
|---|---|---|
| 0,35 - 0,75 mm$^2$ | 121586-5131 | WWZ-20-100-APK16-07-002 |
| 0,75 - 1,5 mm$^2$ | 121586-5132 | WWZ-20-100-APK16-15-002 |



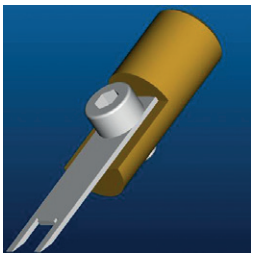
## Support Tools, 51-way





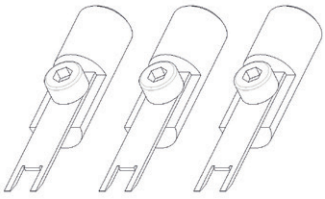




| Designation | Order No. |
|---|---|
| Replacement Nut for MA-APD-51-R | 217-8516-005 |
| Assembly adaptor for plug MA-APD-51-P-SEC-LOCK | 121586-5202 |
| Assembly adaptor for receptacle MA-APD-51-R-SEC-LOCK | 121586-5203 |
| Assembly adaptor for Jam nut MA-APD-51-FL-SEC-LOCK | 121586-5206 |
| Unlocking Device | 317-8675-054 |
| Secondary Lock Set CET-ADP-51 | 121586-5259* |

*For plug only



# APD Tooling, 51-way

## Hand Crimp Tool for Press-in Contacts

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

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



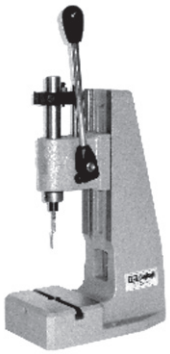
## Automatic Crimp Tooling for Press-in Contacts

| 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 |



Dimensions shown in mm
Specifications and dimensions subject to change

# APD PCB Connectors



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.

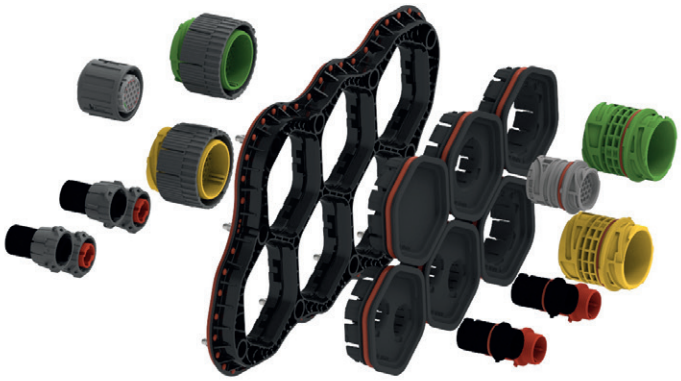
## Technical Specifications

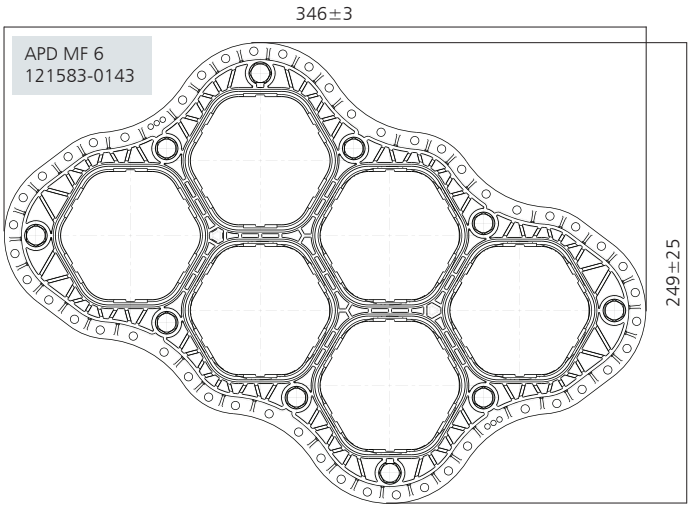
| | |
|---|---|
| **Mechanical Data** | All PCB connectors are derived from standard APD lines and feature similar properties |
| **Electrical Data** | Depends on exact design of contacts and requirements of solution, generally similar to respective APD standard product |
| **Environmental** | IP67 / 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 |

- PCB contacts are useable in all non secondary lock versions
- Increased long term stability – sealing against e.g. motor oil
- Individual defintion 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

# Modular APD Interface

Enabling quick and simple management of APD connectors incabin to chassis and centralized interconnect applications.






## The Challenge

Mating, un-mating, reconfiguring or adding cabin to chassis and centralized interconnects on the production line can be a complex, time consuming and costly exercise. In some instances the cabin can be removed from the chassis several times during the assembly process.

Similarly, subsequent upgrades, services and refurbishments can very often necessitate additions or amendments to power and signal connectivity within the vehicle. Once again managing and working with these traditional interconnect configurations can be surprisingly complex.

## The ITT Cannon Solution

In order to solve this issue ITT Cannon's engineers developed the innovative and patented Modular APD Interface that ensure installing, reconfiguring, mating and un-mating of Cannon's class leading APD interconnects is simple, fast and pain free.

The easy to install modular interface saves time, saves space and reduces complexity during initial assembly and subsequent service and upgrade activity. The system delivers exceptional flexibility to add or change connectors as additional vehicle services are developed and to implement standardized yet customizable connector systems for multiple applications.

## Key Features

- Simple to install
- Flexible modular design providing
  – Ability to easily add and reconfigure connectors
  – Standardized solution for multiple applications
- Space saving
- Reduces assembly time and complexity
- For use with class leading APD interconnect range
- Fully customizable plate and modules

| Modular AP Interface technical data | |
|---|---|
| **Temperature Range** | -40°C to +85°C |
| **Water tightness** | IP54 / IP6K5 depending on mounting position |
| **Material** | Module: PBT GF10<br>Sealing of Module: HNBR<br>Frame: PBT GF30<br>Frame Seal: TPE |

Dimensions shown in mm
Specifications and dimensions subject to change

# APD Customized Solutions

The APD Series is a fully proven and diversified solution for harsh environment applications. Still, on occasions, there is an off-road and heavy vehicle applications with non-standard requirements that cannot be met by off-the-shelf connectors. This is where ITT Cannon can help, as APD is a great starting point for developing a truly bespoke solution. Some examples of how APD, combined with deep application knowledge and engineering expertise, has delivered for customers include…

## Connector Solution for Use Within Diesel Engines

A German engine manufacturing company came to ITT Cannon requiring a custom receptacle for large diesel engines such as those found in ships and trains. These connectors were used within the engine, so they had to provide excellent sealing against engine oils while maintaining the integrity of the contact in the presence of extreme vibration.

To address the needs of this design, APD 7-way connectors from the standard APD series served as a starting point. They included customizations such as an additional o-ring to improve tightness, vibration resistance, and pressure resistance and a stainless steel spring clip to hold the connector in place. In addition, due to severe space limitations, the overall connector footprint was reduced to ½ the size of the standard connector solution.

## Connector Solution for Double-Clutch Gearbox

A major agricultural and construction equipment manufacturer required a custom solution for a double-clutch gearbox for tractor transmissions. This gearbox required six different connections: two larger 6-way power connectors based on the APD 19-way interface and 4 smaller APD 4-way-based connectors for signal transmission.

Several customizations were required to meet design specifications. A radical change in the form and shape of the connectors was necessary for them to fit within the unique shape of the gearbox. Two connectors would be highly exposed to gear oil, and all had vibration resistance requirements that were met by two bespoke purple o-rings.

## Connectors for a Diesel Pump Housing

A global Tier 1 supplier for commercial vehicle manufacturers required connectors that would be exposed to diesel exhaust fluid (AdBlue) within a Selective Catalytic Reduction (SCR) pump and contacted ITT Cannon for a custom solution. With APD 37-way as a starting point, as requested by the customer who was familiar with this product, key customization included substantial amendments to the receptacle form factor and size so that the connectors would fit within the customer pump housing and a stainless steel bracket to hold the connector securely in place. The application required 7 of the available 37 contact positions and the unused contact cavities were closed in the production process, ensuring the customer didn't need to seal cavities. ITT Cannon delivered a full cable assembly, incorporating the custom connector, to the customer facility to minimize integration time and complexity.

# APD Conversion Charts

## Cross Reference AWG Size / metric size ($mm^2$)

| 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 | +28 | +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

Dimensions shown in mm
Specifications and dimensions subject to change

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cannon


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