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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.

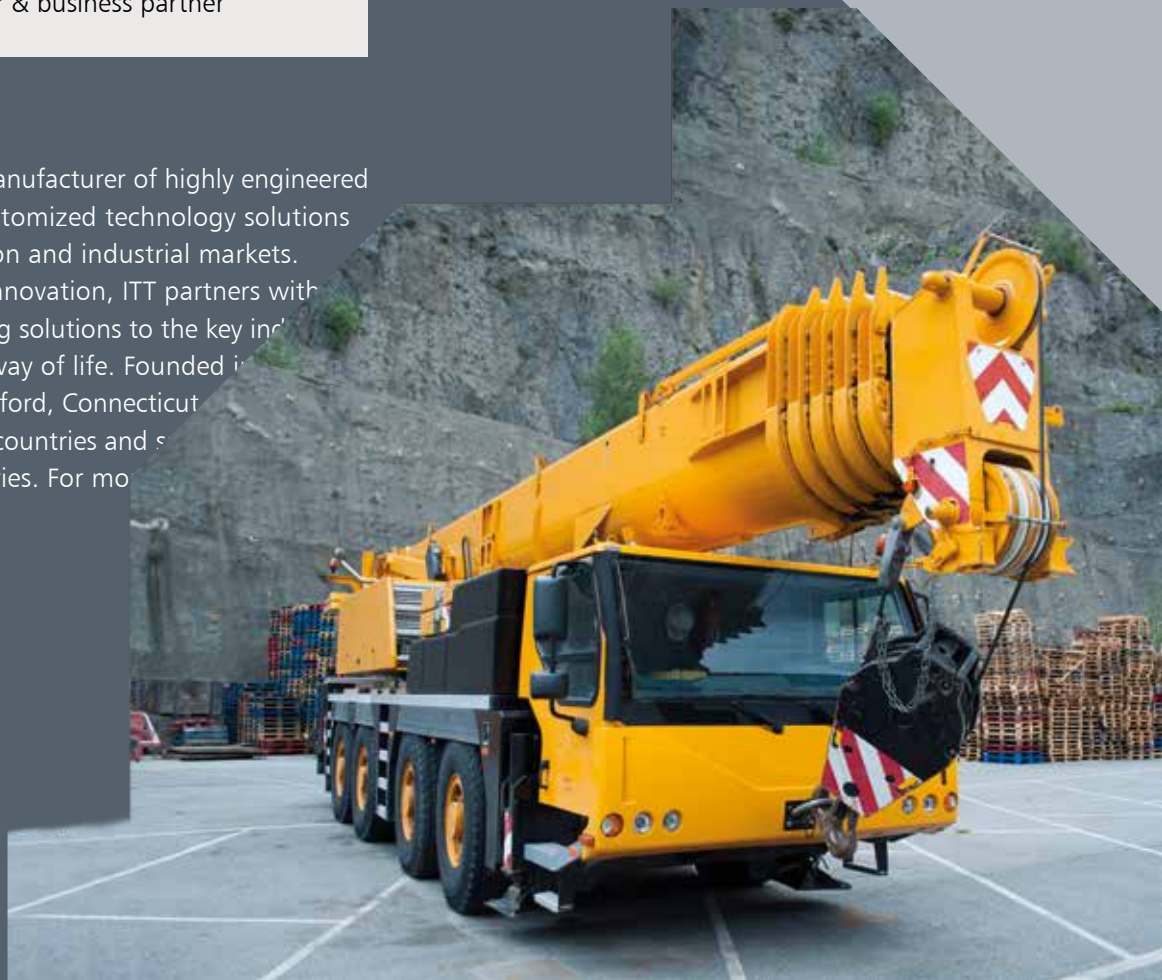
### The ITT Cannon difference

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

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### 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 customers to deliver enduring solutions to the key industries that underpin our modern way of life. Founded in 1911, ITT is headquartered in Stamford, Connecticut and has manufacturing facilities in more than 35 countries and sales offices in approximately 125 countries. For more information, visit [www.itt.com](http://www.itt.com).



# APD Example Applications



Agriculture



Truck



Bus



Forestry



Construction



Recreation



Mining



Specialty

# Table of contents

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APD Introduction .....	5
APD Overview .....	6
APD 1-2-way .....	7-23
APD 4-7-way.....	24-40
APD Sensor Connectors.....	41-42
APD 19-way.....	43-52
APD 37 & 51-way .....	53-65
APD PCB Versions.....	66
APD Modular Interface.....	67
APM 4-way.....	68
APE 2-3-way .....	70
APC 2-6-way.....	72
APD Customized Solutions .....	75
Conversion Charts .....	76
Part Number Index .....	77-78

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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 specialized 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.

Complementing the APD range are several additional full-plastic circular and rectangular connectors engineered for harsh-environment applications. The APE, APM, and APC series offer small, lightweight solutions that meet the demanding requirements of today's off-road and specialized vehicle markets.

# APD Product Overview

<b>APD / ISO 15170</b>					
<b>Series</b>	1-way	2-way	4-way	6/7-way	Sensor style 1
<b>Type</b>	Plug / Receptacle Flange / Jam Nut / Snap-In	Plug / Receptacle Flange / Jam Nut / Snap-In	Plug / Receptacle Flange / Jam Nut	Plug / Receptacle Flange / Jam Nut	Receptacle
<b>Contacts Materials</b>	Copper alloy silver plated	Copper alloy silver plated	Copper alloy tin, silver, gold plated	Copper alloy tin, silver, gold plated	Copper alloy tin, silver, gold plated
<b>Contact style</b>	Machined	Machined	Stamped & Formed	Stamped & Formed Machined	Machined
<b>Page Number</b>	8-11	18-20	25-27	35-37	41

<b>APD / ISO 15170</b>					
<b>Series</b>	Sensor style 2	19-way	37-way	51-way	PCB
<b>Type</b>	Receptacle	Plug / Receptacle Flange / Jam Nut / Wire-to-wire	Plug / Receptacle Flange	Plug / Receptacle / Jam Nut	Receptacle
<b>Contacts Materials</b>	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
<b>Contact style</b>	Machined	Stamped & Formed	Stamped & Formed Machined	Stamped & Formed Machined	Machined
<b>Page Number</b>	42	44	54-55	62	66

			
<b>Series</b>	APM	APE	APC
<b>Type</b>	Plug / Receptacle	Plug	Plug / Receptacle
<b>Contacts Materials</b>	Copper alloy, tin plated	Copper alloy, silver plated	Copper alloy, tin plated
<b>Contact style</b>	Stamped and Formed	Machined, Press-in	Stamped and Formed
<b>Page Number</b>	68-69	70-71	72-74



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 mm<sup>2</sup> up to 50 mm<sup>2</sup> 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	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	0,4 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

Mechanical Data	
<b>Durability</b>	50 Mating Cycles
<b>Coupling Torque</b>	2 Nm max.
<b>Static Load, free connector</b>	350 N (ISO 15170-2, Sec. 4.6)

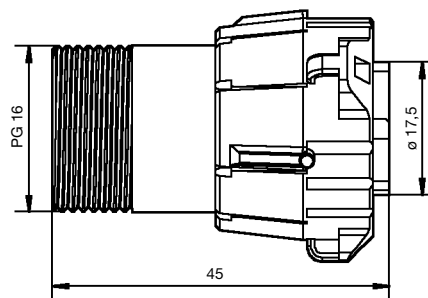
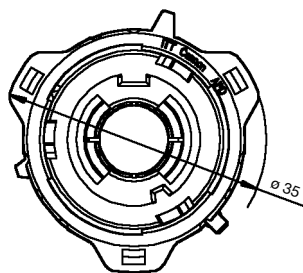
Environmental Data (acc. ISO 15170)	
<b>Temperature Range</b>	-40 °C up to 125 °C (ISO 15170-2, Sec. 6.4)
<b>Humidity Range</b>	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
<b>Sealing</b>	IP 67 (DIN EN 60529)
<b>Salt Spray</b>	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
<b>Industrial Climate</b>	SO <sub>2</sub> ,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

Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	HNBR (alternative FKM)
<b>Coupling Nut</b>	PA 66 GF
<b>Contacts</b>	Copper Alloy, Ag plated

\*Further information available upon request.

# APD High Power Plug, 1-way

High Power Plug, 1-way

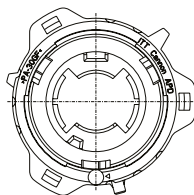


Order No.	Designation	Code	Color
121583-0012	APD-5BSH	5	blue (RAL 5012)
121583-0013	APD-6BSH	6	red (RAL 2002)
121583-0042	APD-7BSH	7	black (RAL 9005)

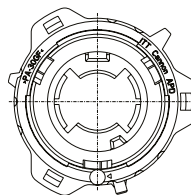
Packaging unit 100 pcs.  
 Socket crimp contacts see pages 12 and 13.  
 Accessories, see pages 14 and 15.  
 Note: Always use hex nut and cable seal.

## Coding, 1-way layouts

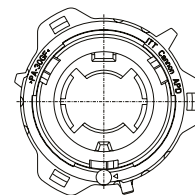
View on Mating Face



Code 5 blue



Code 6 red



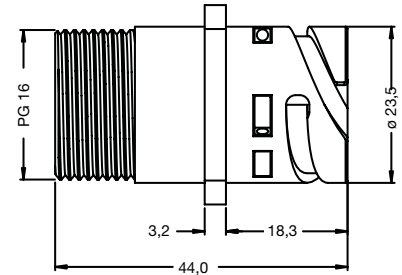
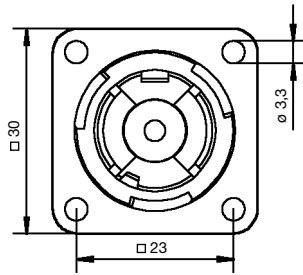
Code 7 black

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

# APD High Power Flange Receptacle, 1-way



High Power Flange Receptacle, 1-way

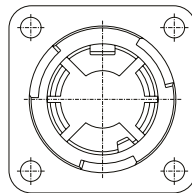


Order No.	Designation	Code	Color
121583-0014	APD-5APH	5	blue (RAL 5012)
121583-0015	APD-6APH	6	red (RAL 2002)
121583-0043	APD-7APH	7	black (RAL 9005)

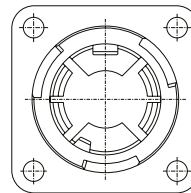
Packaging unit 100 pcs.  
Pin crimp contacts see pages 12 and 13.  
Accessories, see pages 14 and 15.

## Coding, 1-way layouts

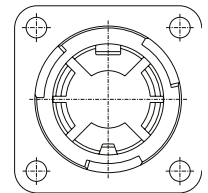
View on Mating Face



Code 5 blue



Code 6 red

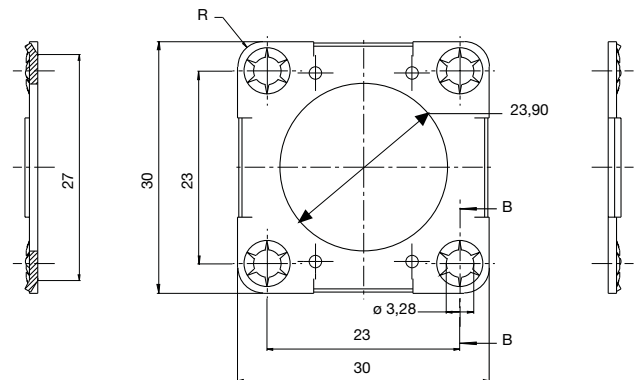
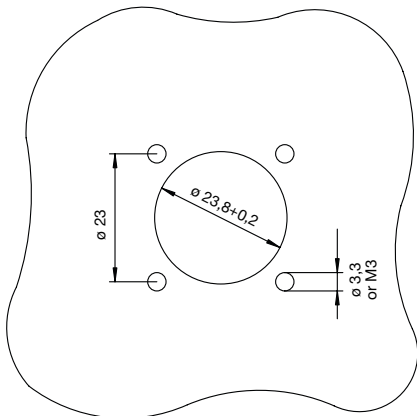


Code 7 black

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

## Panel Cut Out

Flange for all Flange Receptacles

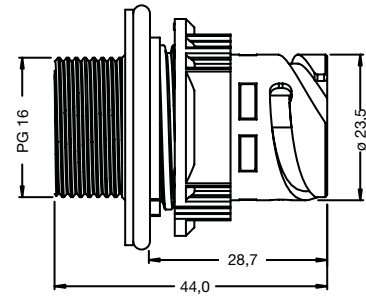
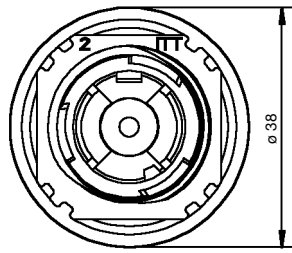


Order Number: 066-8516-006  
Metal mounting flange for wall mounting of flange receptacles.

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

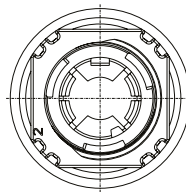


Order No.	Designation	Code	Color
121583-0016	APD-5CPH	5	blue (RAL 5012)
121583-0017	APD-6CPH	6	red (RAL 2002)
121583-0217	APD-7CPH	7	black (RAL 9005)

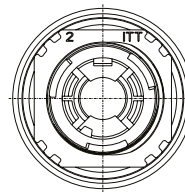
Packaging unit 100 pcs.  
 Pin crimp contacts see pages 12 and 13.  
 Accessories, see pages 14 and 15.  
 Note: Includes jam nut for wall thickness 1...4 mm. Always use hex nut and cable seal.

## Coding, 1-way layouts

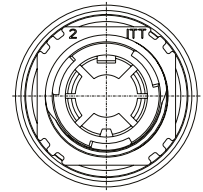
View on Mating Face



Code 5 blue



Code 6 red

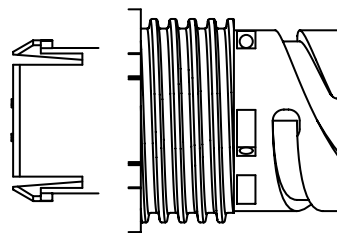
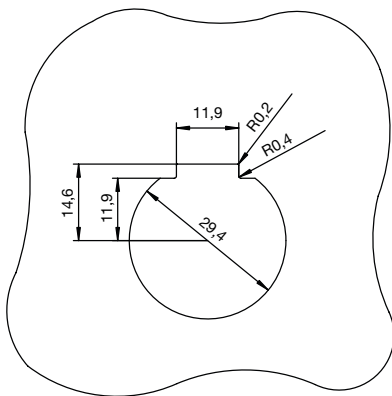


Code 7 black

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

## Panel Cut Out

Flange for all Flange Receptacles



Housing



O-ring



Jam Nut

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

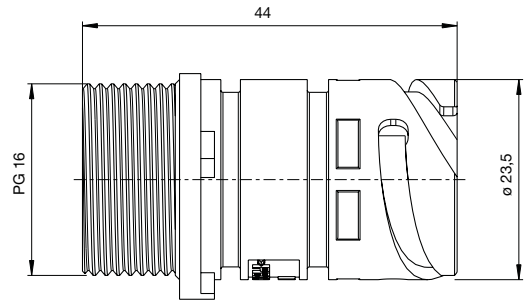
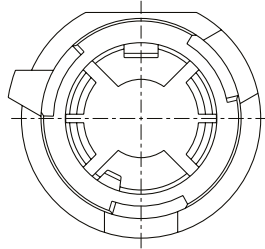
## Jam Nut, special

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

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



High Power Snap-In Receptacle, 1-way

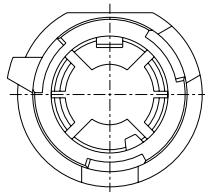


Order No.	Designation	Code	Color
249-8619-020	APD-5SPH	5	blue (RAL 5012)
249-8619-006	APD-6SPH	6	red (RAL 2002)
249-8619-005	APD-7SPH	7	black (RAL 9005)

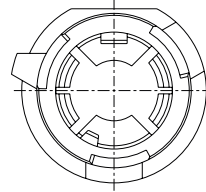
Packaging unit 100 pcs.  
 Pin crimp contacts see pages 12 and 13.  
 Accessories, see pages 14 and 15.  
 Note: Always use hex nut and cable seal.

## Coding, 1-way layouts

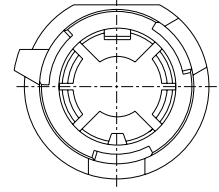
View on Mating Face



Code 5 blue



Code 6 red

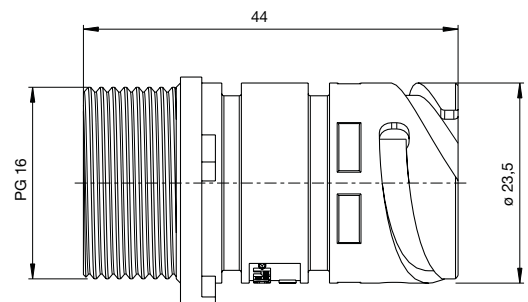
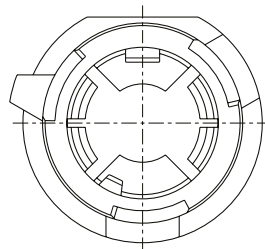


Code 7 black

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

## Panel Cut Out

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

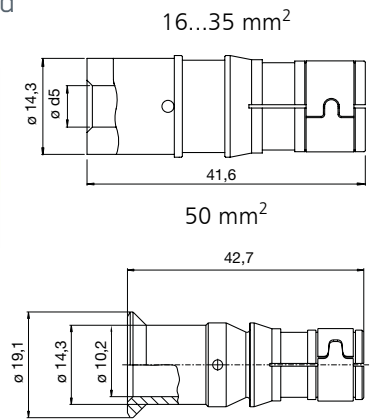


# APD High Power 1-way, Contacts

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

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

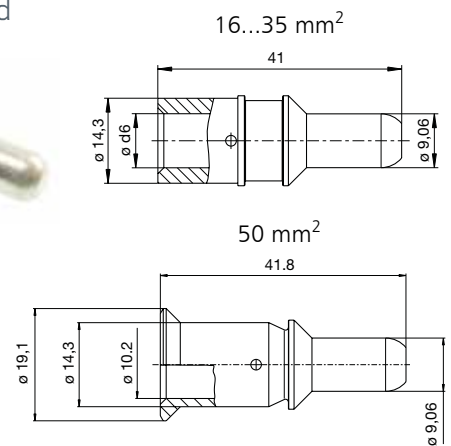
Packaging unit 100 pcs.



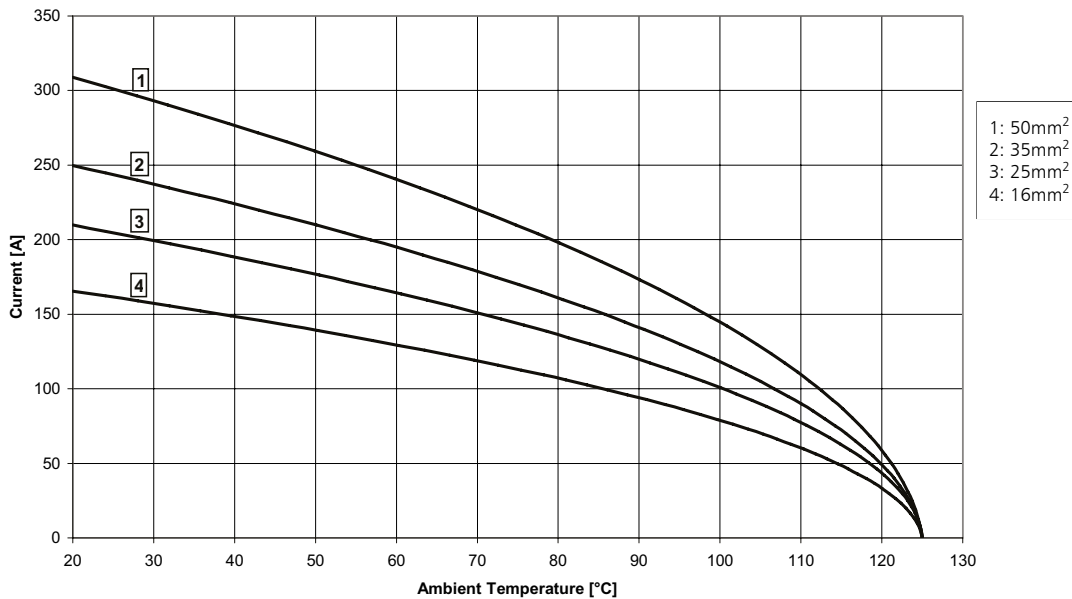
Machined Pin Crimp Contacts, High Performance Copper, Silver plated

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

Packaging unit 100 pcs.



Derating Curve, High Performance Copper Contact



1: 50mm<sup>2</sup>  
2: 35mm<sup>2</sup>  
3: 25mm<sup>2</sup>  
4: 16mm<sup>2</sup>

# 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

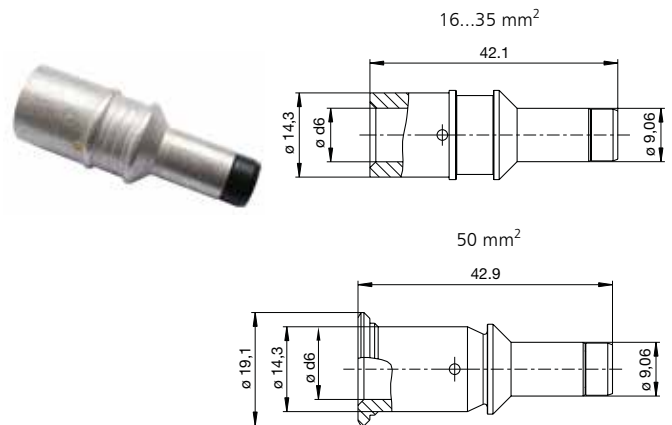
## Power Distribution in:

- Trucks
- Tractors
- Hybrid and Electric Vehicles

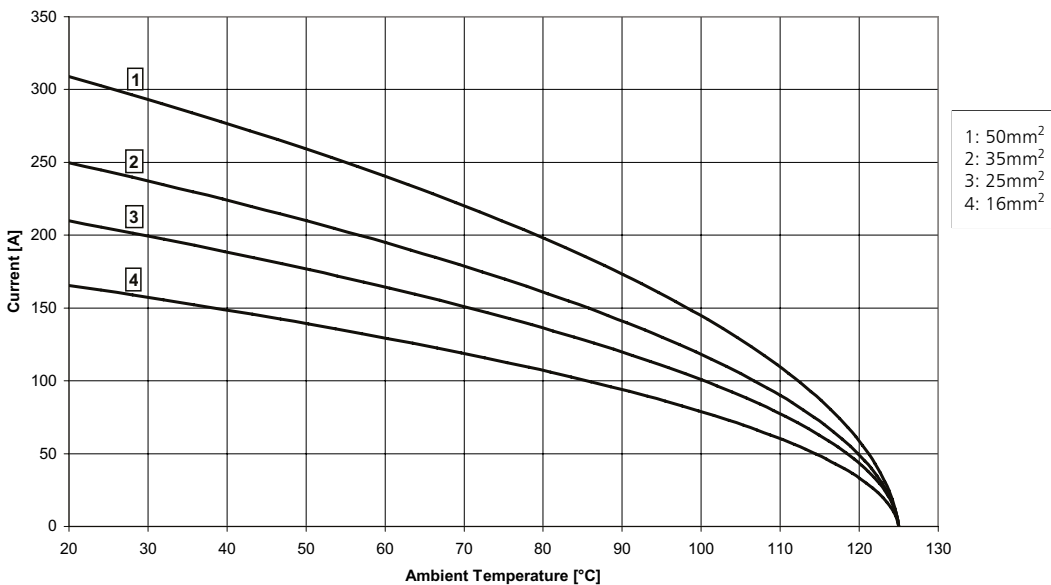
## Machined Pin Crimp Contacts, High Performance Copper, Silver plated, Finger Protected

Order No.	AWG	Contact size	d6+0,15
120110-0229 (16,00 mm <sup>2</sup> )		0	6,2
120110-0220 (25,00 mm <sup>2</sup> )	4	0	7,6
120110-0221 (35,00 mm <sup>2</sup> )	2	0	9,1
120110-0222 (50,00 mm <sup>2</sup> )	with bunch	0	10,2

Packaging unit 100 pcs.



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



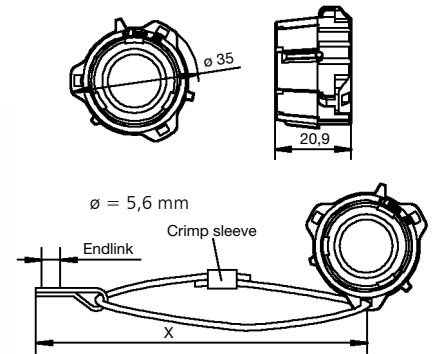
Dimensions shown in mm  
Specifications and dimensions subject to change

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

## Sealing Cap for Receptacle

Designation	Order No.
APD-DP	121583-0021

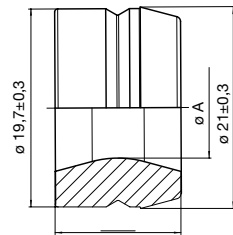
Packaging unit 100 pcs.  
 APD-DP with rope, end link and eyelet  
 X = Total rope length upon request  
 Order number 120110-0026\* X~9cm  
 \* for other lengths please consult the factory



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

### High Power 1-way

Order No.	Insulation $\phi$	$\phi$ 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



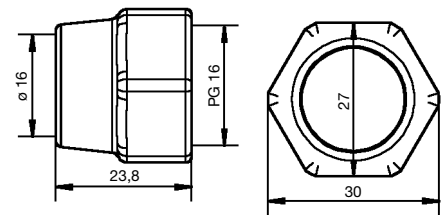
Packaging unit 100 pcs.

## Hexagonal Nut

### High Power 1-way

Order No.
217-8516-010

Packaging unit 100 pcs.

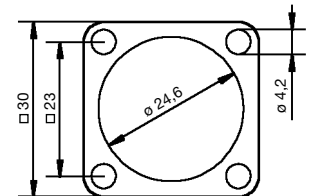


## Flange Gasket

### 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 ( $\phi$ 17 mm)

Packaging unit 100 pcs.



## 90° Endbell

### For 1-way Plug and Receptacle up to 25 mm<sup>2</sup> wire

Order No.
980-8672-004

Packaging unit 100 pcs.



$\phi$  max. = 17,4 mm  
 thread = PG 16

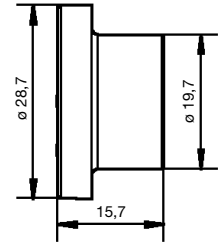
# APD Accessories, 1-way



## Dust Cap for Plug

Order No.
025-8636-005

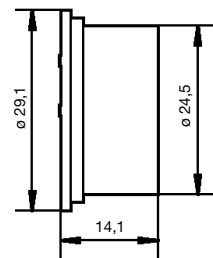
Packaging unit 100 pcs.



## 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

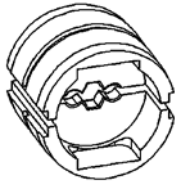
Packaging unit 100 pcs.

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



# APD Tooling High Power, 1-way

Tooling for 1-way High Power Connectors

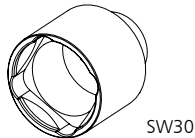


Contact - Pin / Socket	Crimp Die
16mm <sup>2</sup> - 50mm <sup>2</sup>	121586-5229

Optional locator for Pin Contacts - 121586-5232

## Assembly Tools Jam Nut Receptacle

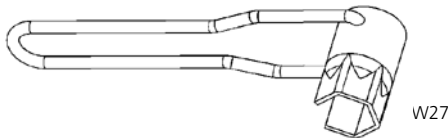
Square box spanner for torque moment wrench to fix the jam nut.



Designation	Order No.
SS627G	317-8649-034

## Assembly Tools (Hexagonal Nut)

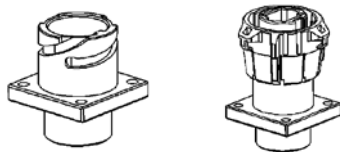
To fix the hexagonal fixing nut 217-8516-010.



Order No.
980-8672-005

Torque: 2.5 ± 0.5Nm

## Assembly and Torque Wrench Adapter

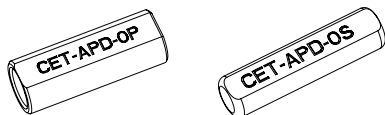


Designation	Order No.
MA-APD-1/ 2-P	248-8653-063
MA-APD-1/ 2-R	249-8619-010

1/4" adaption

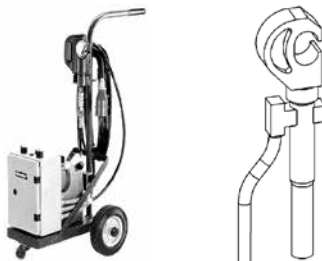
## Contract Extraction Tool

Housing can not be reused.



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

## Crimp Tool



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

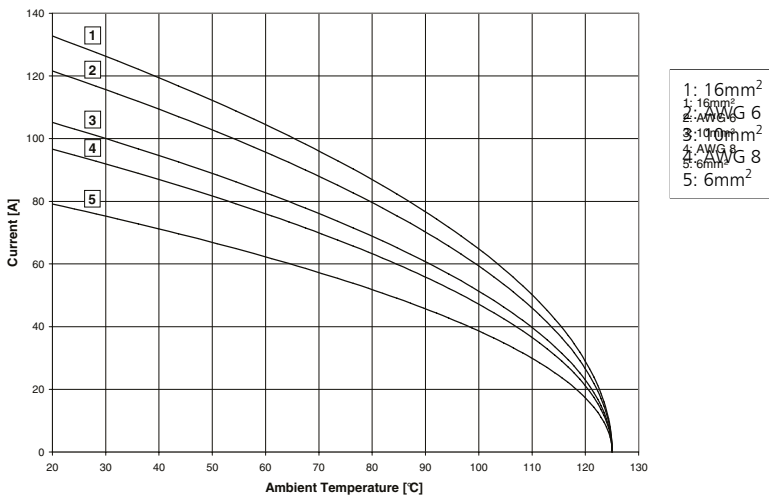
Electrical Data	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	2 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	HNBR (alternative FKM)
<b>Coupling Nut</b>	PA 66 GF
<b>Contacts</b>	Copper Alloy, Ag plated

Mechanical Data	
<b>Durability</b>	50 Mating Cycles
<b>Coupling Torque</b>	2 Nm max.
<b>Static Load, free connector</b>	350 N (ISO 15170-2, Sec. 4.6)

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

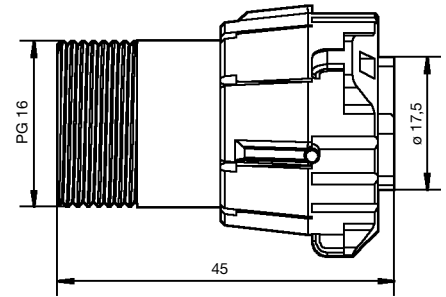
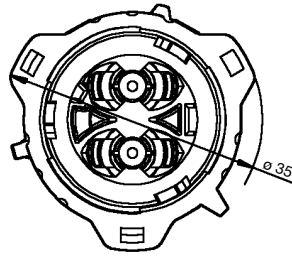
## Derating Curve



\*Further information available upon request.

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

## High Power Plug, 2-way

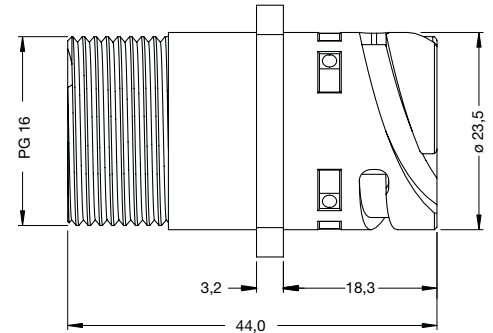
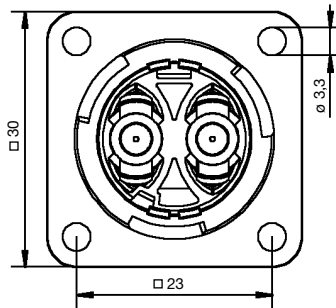


Order No.	Designation	Code	Color
121583-0083	APD-1BSH8-2-12	1	grey (RAL 7036)
121583-0025	APD-1BSH8-2	1	black (RAL 9005)
121583-0084	APD-1BSH8-2-14	1	blue (RAL 5012)

Packaging unit 100 pcs.  
Socket Crimp contacts see page 21.

Accessories, see pages 21 and 22.  
Note: Always use hex nut and cable seal.

## High Power Flange Receptacle, 2-way



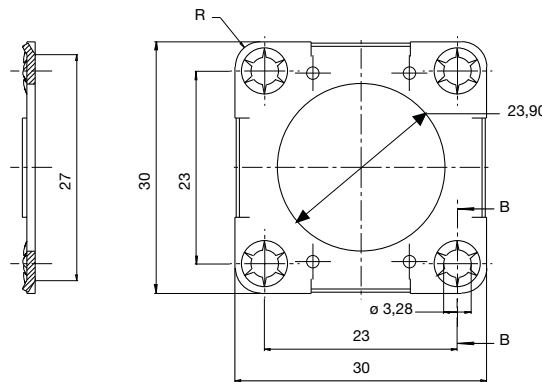
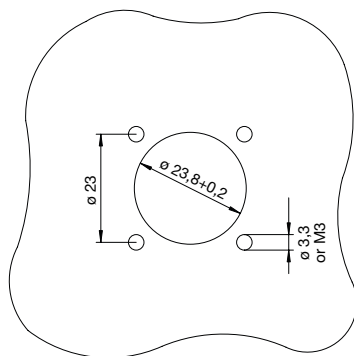
Order No.	Designation	Code	Color
121583-0026	APD-1APH8-2	1	black (RAL 9005)

Packaging unit 100 pcs.  
Pin crimp contacts see page 21.

Accessories, see pages 21 and 22.  
Note: Always include hex nut and cable seal.

## Panel Cut Out

### Flange for all Flange Receptacles



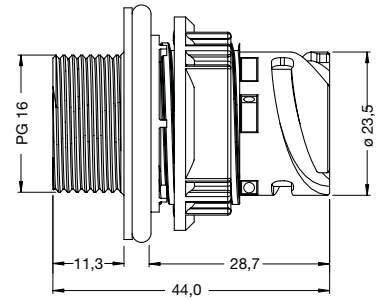
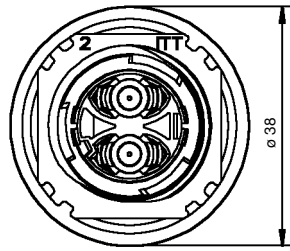
Note: Metal mounting flange for wall mounting of flange receptacles

Order No.
066-8516-006

# APD High Power Jam Nut Receptacle, 2-way



High Power Jam Nut Receptacle, 2-way



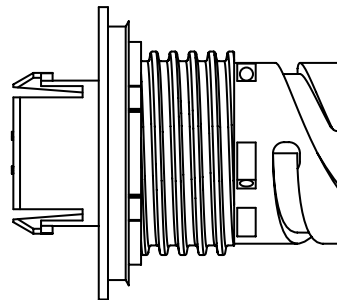
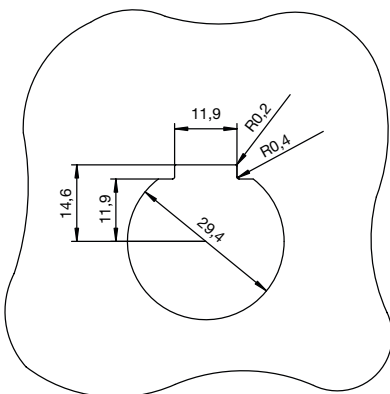
Order No.	Designation	Code	Color
121583-0085	APD-1CPH8-2-12	1	grey (RAL 7036)
121583-0027	APD-1CPH8-2	1	black (RAL 9005)
121583-0086	APD-1CPH8-2-14	1	blue (RAL 5012)

Packaging unit 100 pcs.  
Pin crimp contacts see page 21.  
Accessories, see pages 21 and 22.

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

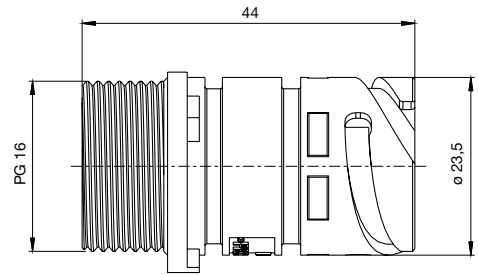
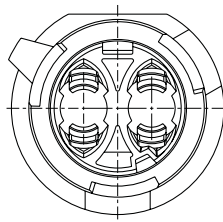
## Jam Nut, special

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

Dimensions shown in mm  
Specifications and dimensions subject to change

# 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 21.  
Accessories, see pages 21 and 22.  
Note: Always use hex nut and cable seal.

## Panel Cut Out

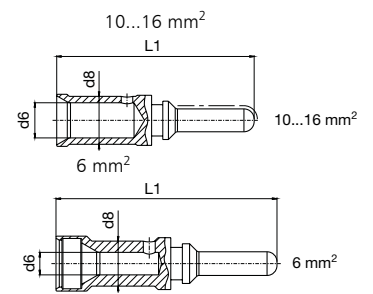
3D data for design of snap-in cut out available on request. Please consult factory.

# APD High Power 2-way, Contacts, Accessories



## Machined Pin Crimp Contacts, Standard Silver Plated

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

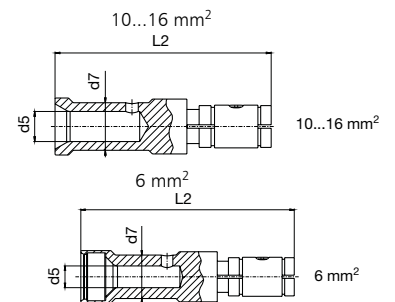


Packaging unit 100 pcs.

\* use individual wire seal or grommet

## Machined Socket Crimp Contacts, Standard Silver Plated

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



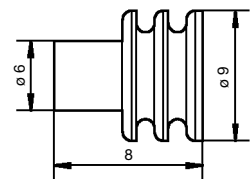
Packaging unit 100 pcs.

\* use individual wire seal or grommet

## Individual Wire Seals

For High Power 2-way 6 mm<sup>2</sup> only

Designation	Order No.
16GN5824	121668-0035



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

## Cable Sealing Set

For High Power 2-way

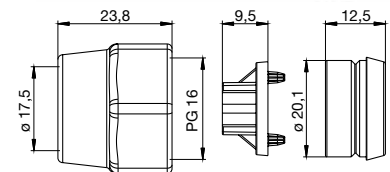
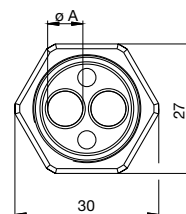
Set consists of:

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
121583-1003	6,8 - 8,3	6,5
121583-1002	7,4 - 8,3	7,3

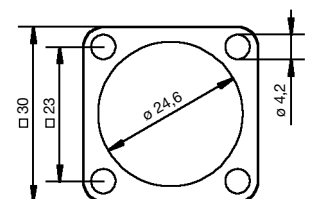


Packaging unit 100 pcs.

## Flange Gasket

For Flange Receptacle, High Power 2-way

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



Packaging unit 100 pcs.

Dimensions shown in mm

Specifications and dimensions subject to change

itccannon.com



# APD High Power 2-way, Accessories

## Sealing Cap for Receptacle

Designation	Order No.
APD-DP	121583-0021

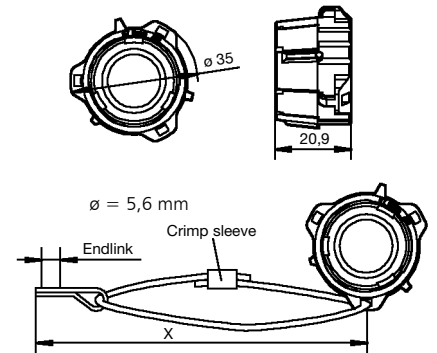
Packaging unit 100 pcs.

### 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.

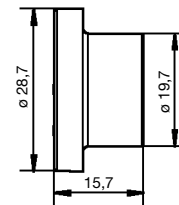


ø max. = 17,4 mm  
thread = PG 16

## Dust Cap for Plug

Order No.
025-8636-005

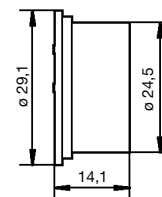
Packaging unit 100 pcs.



## 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.

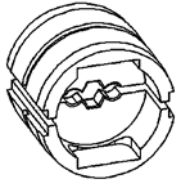
Note: All cavities closed, mates with 1-7-way APD versions.



# APD Tooling High Power, 2-way



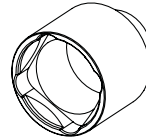
## Crimp Die Tooling for 2-way High Power Connectors



Contact - Pin / Socket	Designator	Order No.
6mm <sup>2</sup> , 10mm <sup>2</sup> , AWG 8, AWG 6	CT120090-165	120090-0165
16mm <sup>2</sup>	CT120090-171	120090-0171

## Assembly Tools Jam Nut Receptacle

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

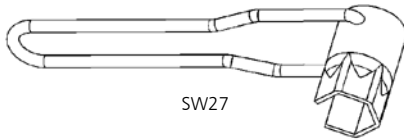


SW30

Order No.
317-8649-034

## Assembly Tools Hexagonal Nut

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

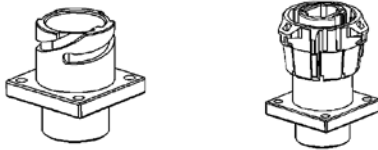


SW27

Designation	Order No.
SS627G	980-8672-005

Torque 2,5 +/- 0,5 Nm

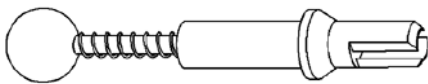
## Assembly and Torque Wrench Adapter



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

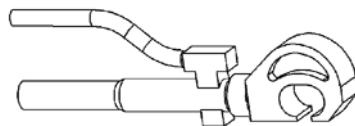


Designation	Order No.
CET- APD-2	121586-5149

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 <sup>2</sup>		121586-5244



# 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	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	5 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

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

Environmental Data (acc. ISO 15170)	
<b>Temperature Range</b>	-40 °C up to 140 °C (ISO 15170-2, Sec. 6.4)
<b>Humidity Range</b>	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
<b>Sealing</b>	IP 67 and IP 69k (DIN EN 60529)*
<b>Salt Spray</b>	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
<b>Industrial Climate</b>	SO <sub>2</sub> , 0,67 % (ISO 15170-2, Sec. 6.3)
<b>Fluid Compatibility</b>	Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)*
<b>Vibration Resistance</b>	Sine, 300m/s <sup>2</sup> , 3 x 100h, RT and 120°C (ISO 15170-2)*

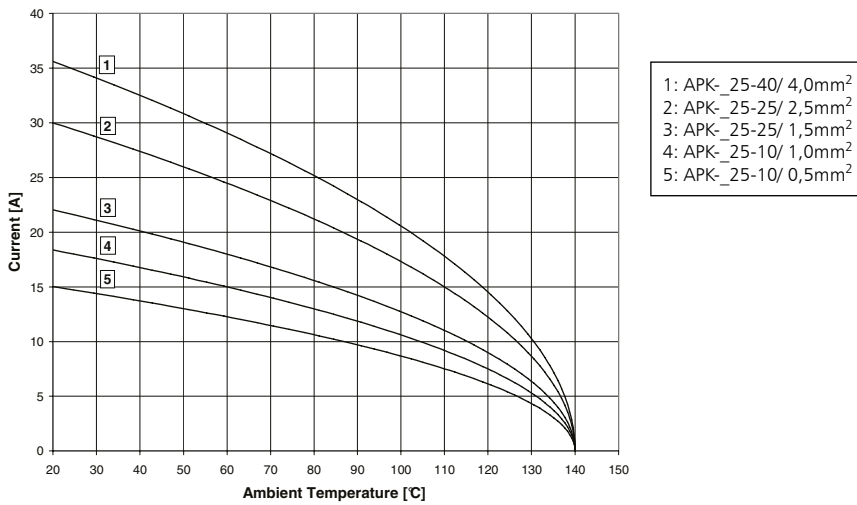
Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	HNBR (alternative FKM)
<b>Coupling Nut</b>	PA 66 GF
<b>Contacts</b>	Copper Alloy, Ag plated

\* Further information available upon request.

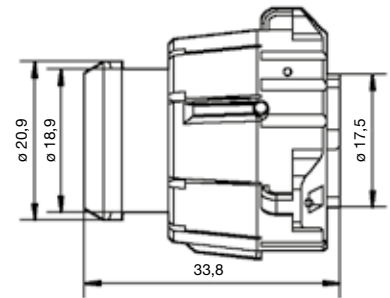
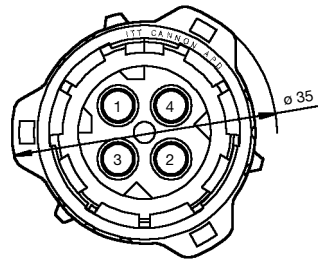
# APD Plug, 4-way



## Derating Curve



## Plug, 4-way



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

Packaging unit 100 pcs.  
 Socket crimp contacts see page 31.  
 Accessories, see pages 31 and 32.

## Coding, 4-way layouts

View on Mating Face



Code 1 black



Code 2 grey



Code 3 green



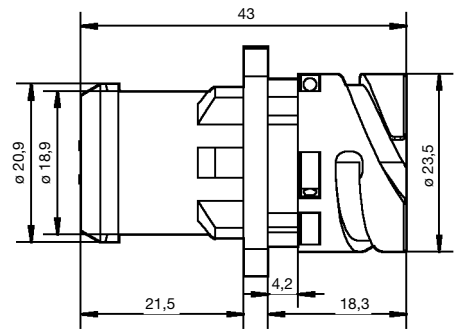
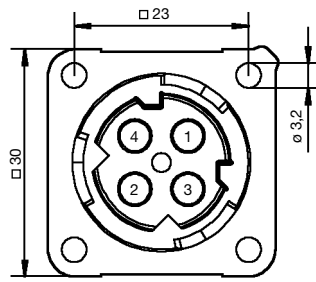
Code 4 blue

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)

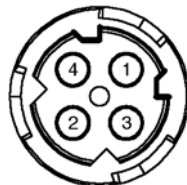
Packaging unit 100 pcs.  
Pin crimp contacts see page 31.  
Accessories, see pages 31 and 32.

## Coding, 4-way layouts

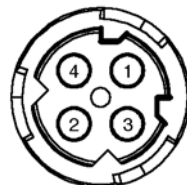
View on Mating Face



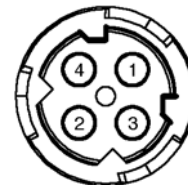
Code 1 black



Code 2 grey



Code 3 green

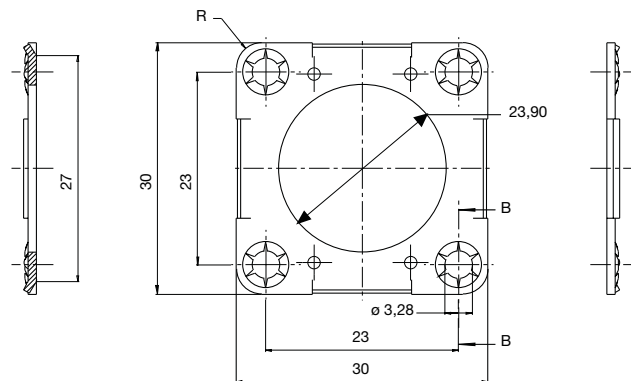
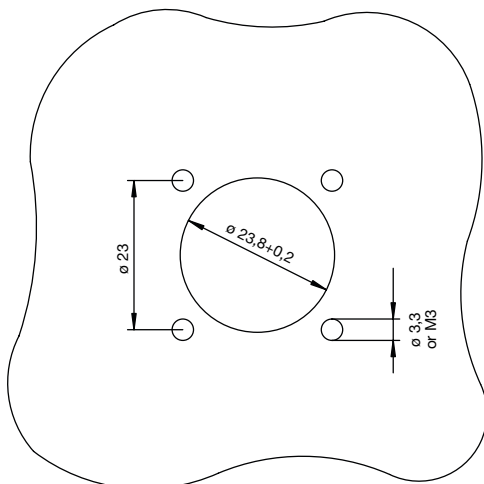


Code 4 blue

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

## Panel Cut Out

Flange for all Flange Receptacles



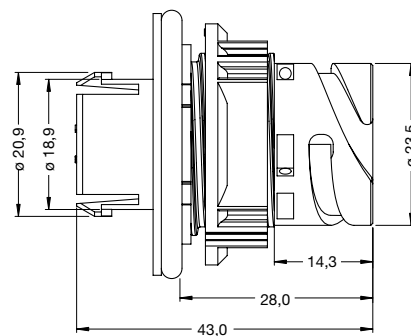
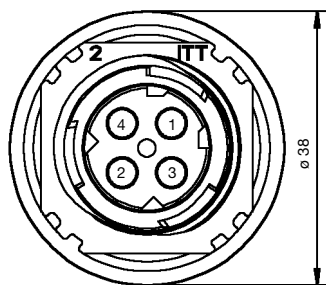
Order No.
066-8516-006

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

# APD Jam Nut Receptacle, 4-way



## Jam Nut Receptacle, 4-way



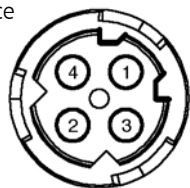
Order No.	Designation	Code	Color
121583-0008	APD-1CP-K2	1	black (RAL 9005)
121583-0009	APD-2CP-K2	2	grey (RAL 7036)
121583-0010	APD-3CP-K2	3	green (RAL 6029)
121583-0011	APD-4CP-K2	4	blue (RAL 5012)

Packaging unit 100 pcs.  
Pin crimp contacts see page 31.  
Accessories, see pages 31 and 32.

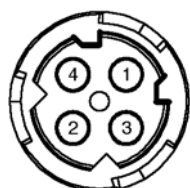
Note: Includes jam nut for wall thickness 1...4 mm.

## Coding, 4-way layouts

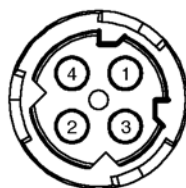
View on Mating Face



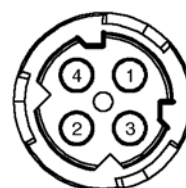
Code 1 black



Code 2 grey



Code 3 green

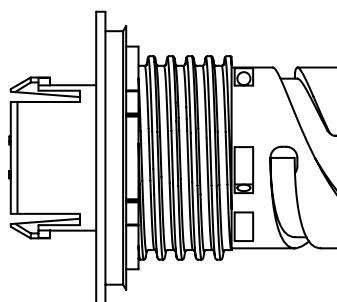
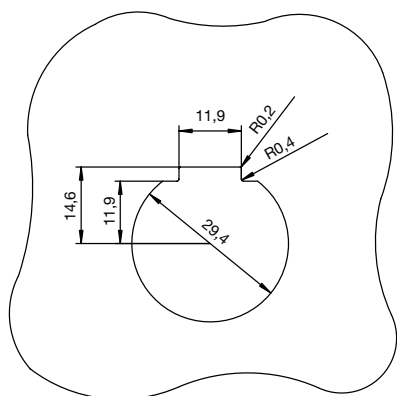


Code 4 blue

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

## Panel Cut Out

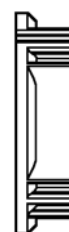
Piece Parts / Assembly Instruction



Housing



O-ring



Jam Nut

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

## Jam Nut, special

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

Dimensions shown in mm  
Specifications and dimensions subject to change

# APD 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!**

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

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

Environmental Data (acc. ISO 15170)	
<b>Temperature Range</b>	-40 °C up to 140 °C (ISO 15170-2, Sec. 6.4)
<b>Humidity Range</b>	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
<b>Sealing</b>	IP 67 and IP 69k (DIN EN 60529)*
<b>Salt Spray</b>	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
<b>Industrial Climate</b>	SO <sub>2</sub> , 0,67 % (ISO 15170-2, Sec. 6.3)
<b>Fluid Compatibility</b>	Brakefluid, ATF, fuel, .. (ISO 15170-2, Sec. 6.6)*
<b>Vibration Resistance</b>	Sine, 300m/s <sup>2</sup> , 3 x 100h, RT and 120°C (ISO 15170-2)*

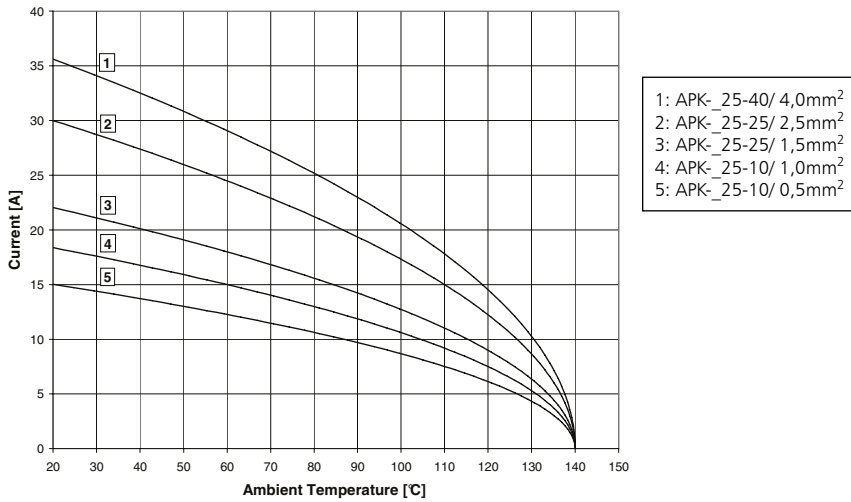
Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	HNBR (alternative FKM)
<b>Coupling Nut</b>	PA 66 GF
<b>Contacts</b>	Copper Alloy, Sn or Au plated

\* Further information available upon request.

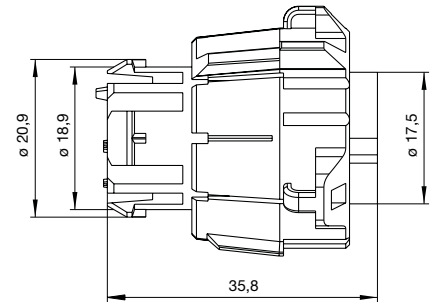
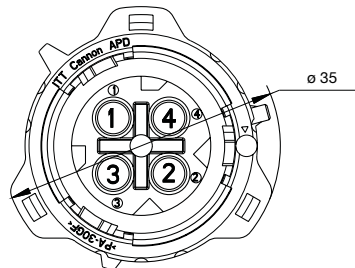
# APD Plug, 4-way High Voltage



## Derating Curve



## Plug, 4-way High Voltage

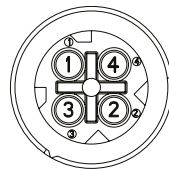


Order No.	Designation	Code	Color
121583-0213	APD-59BS-HV	5	orange (RAL 2003)
121583-0214	APD-69BS-HV	6	orange (RAL 2003)

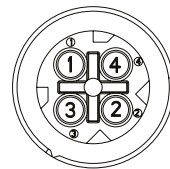
Packaging unit 100 pcs.  
 Socket crimp contacts see page 31.  
 Accessories, see pages 31 and 32.

## Coding, 4-way layouts High Voltage

View on Mating Face



Code 5 orange



Code 6 orange

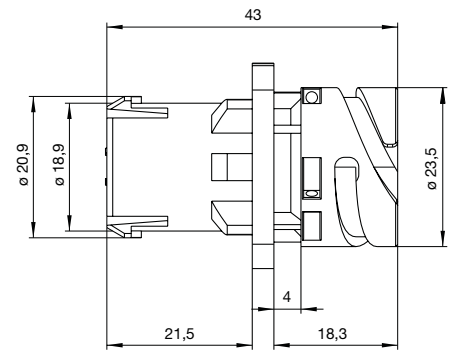
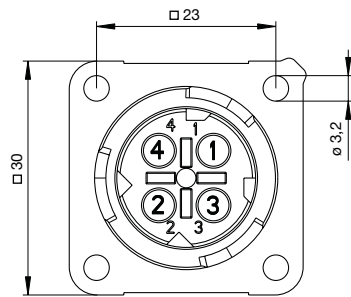
Note: The connectors offer two mechanical keying.

Dimensions shown in mm  
 Specifications and dimensions subject to change



# APD Flange Receptacle, 4-way High Voltage

## Flange Receptacle, 4-way High Voltage

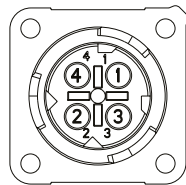


Order No.	Designation	Code	Color
121583-0215	APD-59AP-HV	5	orange (RAL 2003)
121583-0216	APD-69AP-HV	6	orange (RAL 2003)

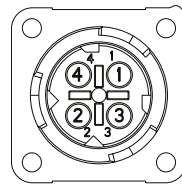
Packaging unit 100 pcs.  
Pin crimp contacts see page 31.  
Accessories, see pages 31 and 32.

## Coding, 4-way layouts High Voltage

View on Mating Face



Code 5 orange

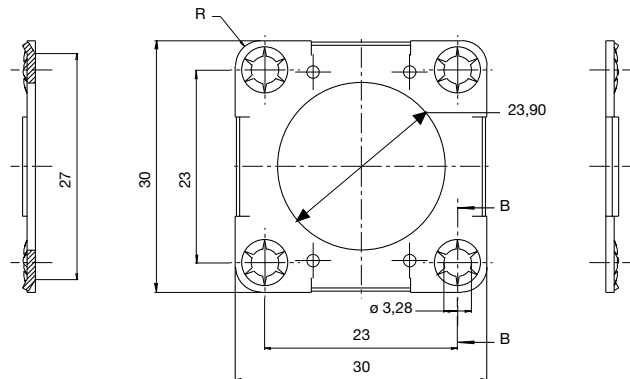
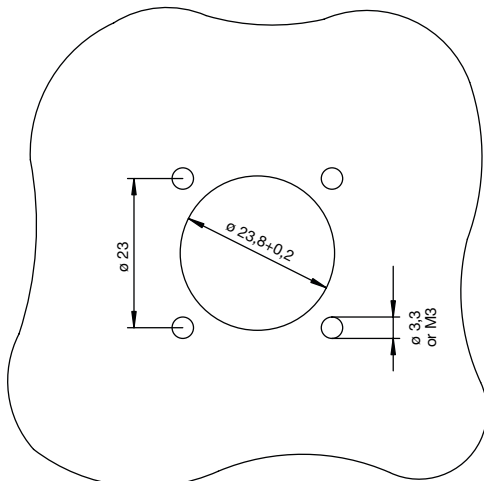


Code 6 orange

Note: The connectors offer mechanical keying.

## Panel Cut Out

Flange for all Flange Receptacles



Order No.
066-8516-006

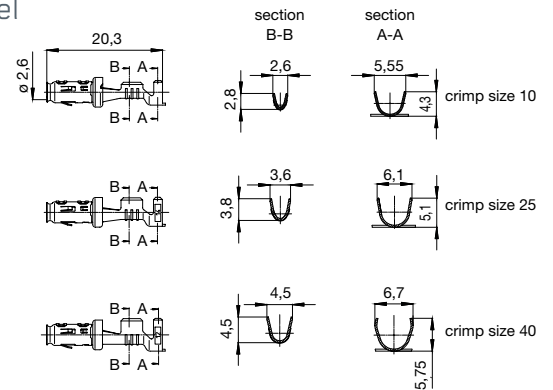
Metal mounting flange for wall mounting of flange receptacle

# APD Contacts, Accessories 4-way



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

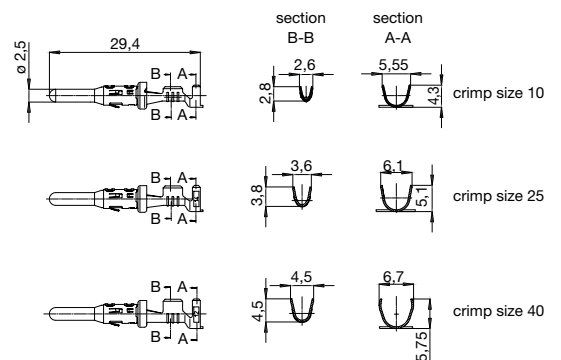
Designation - Standard	Order No.
APK-SB25A10-002 (0,5 - 1,0 mm <sup>2</sup> )	121668-0125
APK-SB25A25-002 (1,5 - 2,5 mm <sup>2</sup> )	121668-0126
APK-SB25A40-002 (2,5 - 4,0 mm <sup>2</sup> )	121668-0127
Optional with Au-flash	Order No.
APK-SB25H10-002 (0,5 - 1,0 mm <sup>2</sup> )	121668-0022
APK-SB25H25-002 (1,5 - 2,5 mm <sup>2</sup> )	121668-0128
APK-SB25H40-002 (2,5 - 4,0 mm <sup>2</sup> )	121668-0124



Note: For versions with silver plating please consult factory.

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

Designation - Standard	Order No.
APK-PB25A10-002 (0,5 - 1 mm <sup>2</sup> )	121668-0026
APK-PB25A25-002 (1,5 - 2,5 mm <sup>2</sup> )	121668-0027
APK-PB25A40-002 (2,5 - 4,0 mm <sup>2</sup> )	121668-0028
Optional with Au-flash	Order No.
APK-PB25H10-002 (0,5 - 1 mm <sup>2</sup> )	121668-0021
APK-PB25H25-002 (1,5 - 2,5 mm <sup>2</sup> )	121668-0029
APK-PB25H40-002 (2,5 - 4,0 mm <sup>2</sup> )	121668-0025

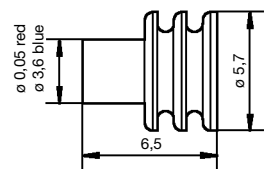


Note: For versions with silver plating please consult factory.

## Individual Wire Seals

For all versions 4-way

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

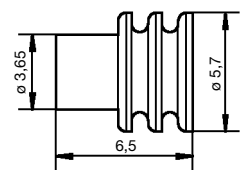


Note: Packaging unit 5000 pcs.

## Wire Filler

For all versions 4-way

Designation	Order No.
15WH5823 white	121668-0034

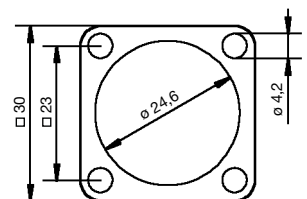


Note: Packaging unit 5000 pcs.

## 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.

Dimensions shown in mm  
Specifications and dimensions subject to change



# APD Accessories, 4-way

## Sealing Cap for Receptacle

Designation	Order No.
APD-DP	121583-0021

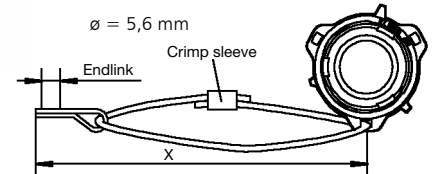
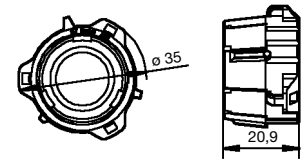
Packaging unit 100 pcs.

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

X = Total rope length upon request

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

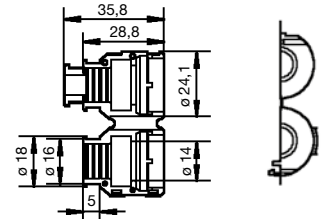
\* for other lengths please consult the factory



## Straight Endbell for Flex Tube

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

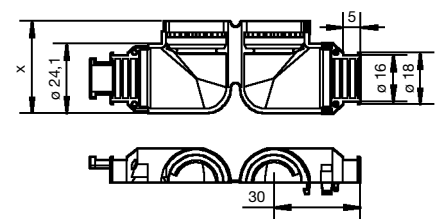
Packaging unit 100 pcs.



## 90° Endbell for Flex Tube

Order No.	Height x
058-8578-106 (ø 8,5 mm)	24
058-8578-101 (ø 8,5 mm)	32
058-8578-103 (ø 10,0 mm)	32
058-8578-105 (ø 11,0 mm)	32

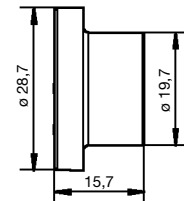
Packaging unit 100 pcs.



## Dust Cap for Plug

Order No.
025-8636-005

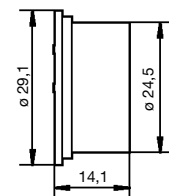
Packaging unit 100 pcs.



## 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.



# APD Tooling, 4-way



Hand Tool for formed (stamped contacts)

Contact - Pin / Socket	Designation	Order No.
APK-SB25AXX-002 (0,5 - 4,0 mm <sup>2</sup> )	CHT-APK-25-002-Seal	121586-5242



Crimp Machine Tool for formed (stamped contacts) (Mini Applicator)

Contact - Pin / Socket	Designation	Order No. (to be mentioned on order)
APK-SB25A10-002 (0,5 - 1,0 mm <sup>2</sup> )	WWZ.20-100-APK25-10-002	121586-5134
APK-SB25A25-002 (1,5 - 2,5 mm <sup>2</sup> )	WWZ.20-100-APK25-25-002	121586-5135
APK-SB25A40-002 (2,5 - 4,0 mm <sup>2</sup> )	WWZ.20-100-APK25-40-002	121586-5136
APK-SB25A40-002 (2,5 - 4,0 mm <sup>2</sup> )	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 derivative of the 4-way connector providing higher pin counts using a 1,6 mm connector system. They are available as versions with stamped and machined contacts.

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

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

Electrical Data	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	5 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

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

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

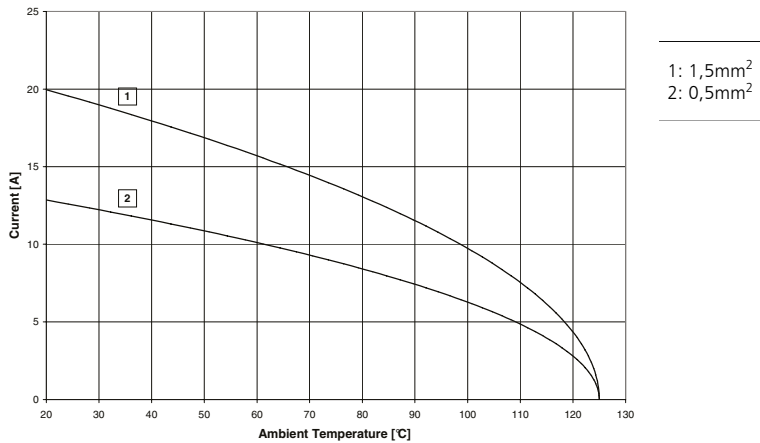
Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	HNBR (alternative FKM)
<b>Coupling Nut</b>	PA 66 GF
<b>Contacts</b>	Copper Alloy, Sn, Ag or Au plated*

\* Further information available upon request.

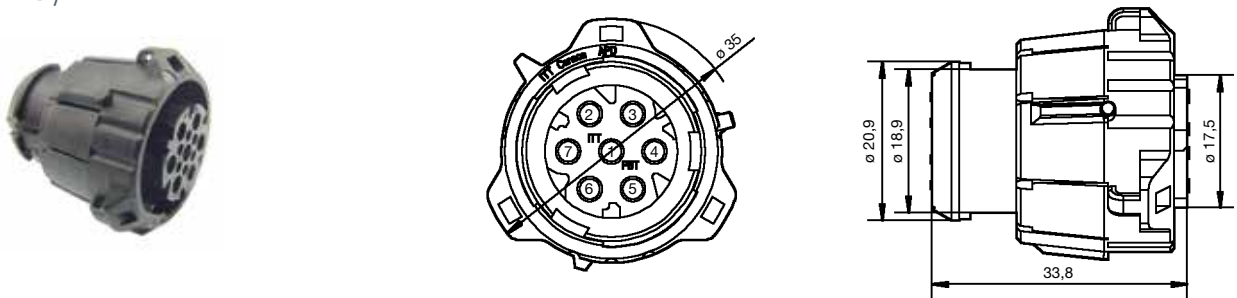
# APD Plug, 6 /7-way



## Derating Curve



## Plug, 6/7-way



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

Packaging unit 100 pcs.  
Socket crimp contacts see page 38.

Accessories, see pages 38 and 39.  
\*contact cavity 1 closed

## Coding, 6/7-way layouts

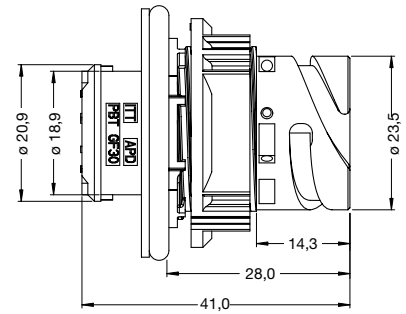
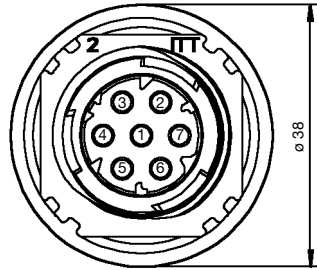


Dimensions shown in mm  
Specifications and dimensions subject to change



# APD Jam Nut Receptacle, 6/7-way

Jam Nut Receptacle  
6/7-way for standard contacts



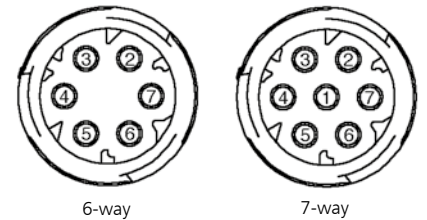
	Order No.	Designation	Code	Color
6-way*	121583-0061	APD-1CP6	1	black (RAL 9005)
7-way	121583-0019	APD-1CP7	1	black (RAL 9005)

Packaging unit 100 pcs.

\* Contact cavity 1 closed

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

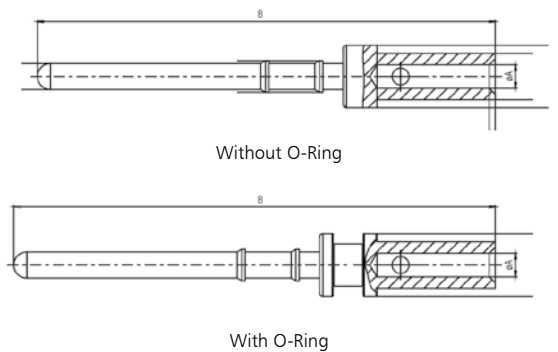
	Order No.	Designation	Code	Color
6-way	on request	-	-	-
7-way	121583-0028	APD-1CP7-EP	1	black (RAL 9005)



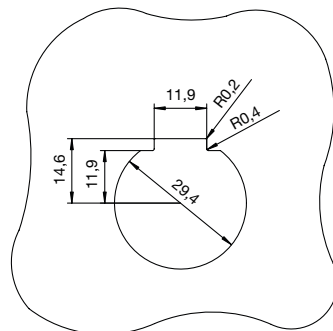
Press-in Crimp Contact  
For Flange and  
Jam Nut Receptacle



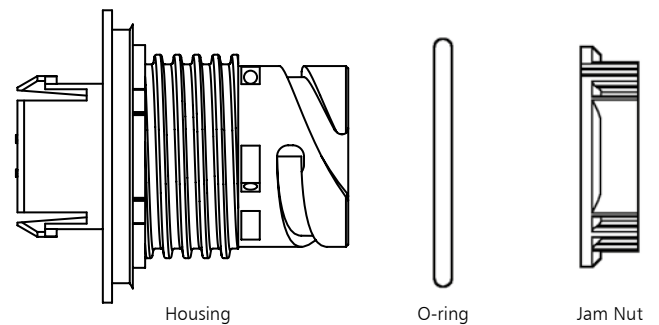
Designation	ø A	B	Crimp Range	Plating	Order No.
Without O-Ring	1.4	27.1	0.35-0.75mm <sup>2</sup>	Tin	330-8672-019
Without O-Ring	1.75	27.1	0.75-1.5mm <sup>2</sup>	Tin	330-8672-021
With O-Ring	1.4	28.5	0.35-0.75mm <sup>2</sup>	Tin	330-8672-024
With O-Ring	1.75	28.5	0.75-1.5mm <sup>2</sup>	Tin	330-8672-025
With O-Ring	1.4	28.5	0.35-0.75mm <sup>2</sup>	Gold	330-8672-028
With O-Ring	1.75	28.5	0.75-1.5mm <sup>2</sup>	Gold	330-8672-027



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



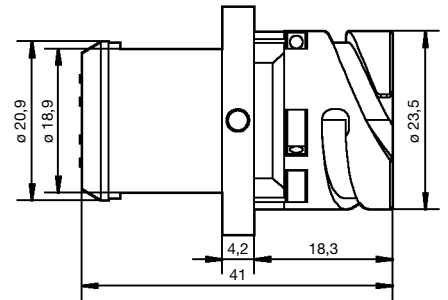
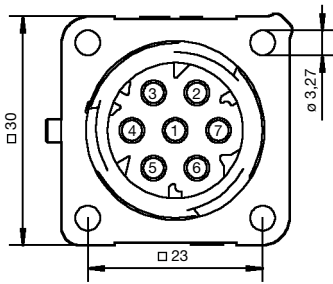
Jam Nut, special

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

# 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)

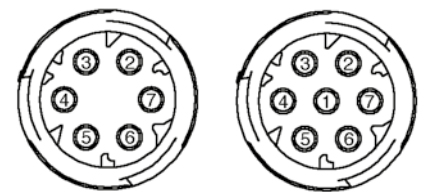
Packaging unit 100 pcs.  
\* Contact cavity 1 closed

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 38.  
Accessories, see pages 38 and 39.



6-way

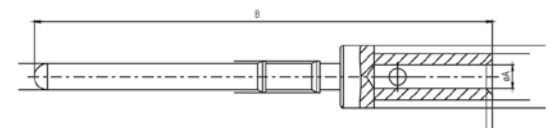
7-way

## Press-in Crimp Contact

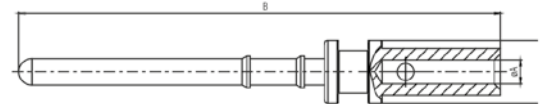
For Flange and  
Jam Nut Receptacle



Designation	ø A	B	Crimp Range	Plating	Order No.
Without O-Ring	1.4	27.1	0.35-0.75mm <sup>2</sup>	Tin	330-8672-019
Without O-Ring	1.75	27.1	0.75-1.5mm <sup>2</sup>	Tin	330-8672-021
With O-Ring	1.4	28.5	0.35-0.75mm <sup>2</sup>	Tin	330-8672-024
With O-Ring	1.75	28.5	0.75-1.5mm <sup>2</sup>	Tin	330-8672-025
With O-Ring	1.4	28.5	0.35-0.75mm <sup>2</sup>	Gold	330-8672-028
With O-Ring	1.75	28.5	0.75-1.5mm <sup>2</sup>	Gold	330-8672-027



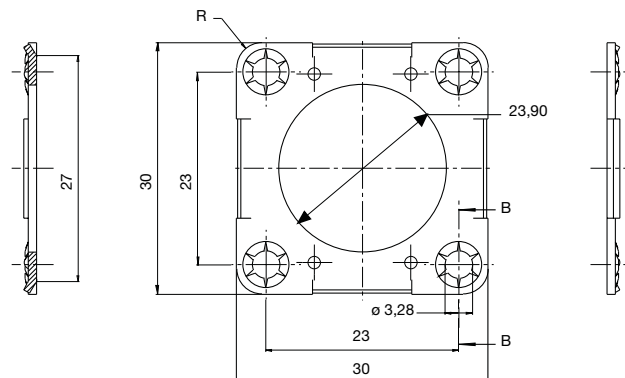
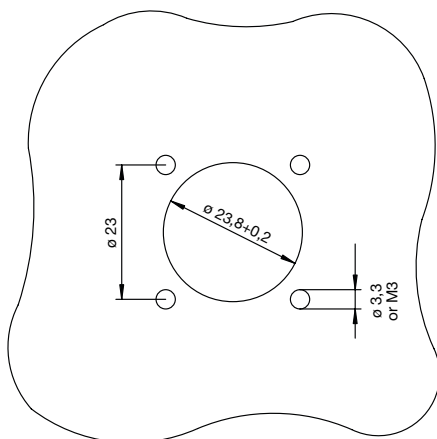
Without O-Ring



With O-Ring

## Panel Cut Out

Flange for all Flange Receptacles



Order No.
066-8516-006

Metal mounting flange for wall  
mounting of flange receptacle

Dimensions shown in mm  
Specifications and dimensions subject to change



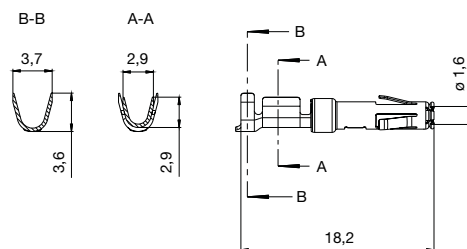
# APD Contacts, Accessories, 6/7-way

## Socket Crimp-Contacts 1,6 mm Standard

3000 contacts per reel

Designation	Order No.
0.32 - 0.5mm <sup>2</sup> - Tin plate - Loose Piece Bulk Pack	192900-0127
0.5 - 1.5mm <sup>2</sup> - Tin plate - Loose Piece Bulk Pack	192900-0003
0.32 - 0.5mm <sup>2</sup> - 0.8μm Au plate - Loose Piece Bulk Pack	192900-0451
0.5 - 1.5mm <sup>2</sup> - 0.8μm Au plate - Loose Piece Bulk Pack	192900-0450
0.32 - 0.5mm <sup>2</sup> - Tin plate - Reel	192900-0125
0.5 - 1.5 mm <sup>2</sup> - Tin plate - Reel	192900-0001
0.32 - 0.5mm <sup>2</sup> - 0.8μm Au plate - Reel	192900-0409
0.5 - 1.5mm <sup>2</sup> - 0.8μm Au plate - Reel	192900-0408

Loose Piece Bulk Pack is 100 pcs.

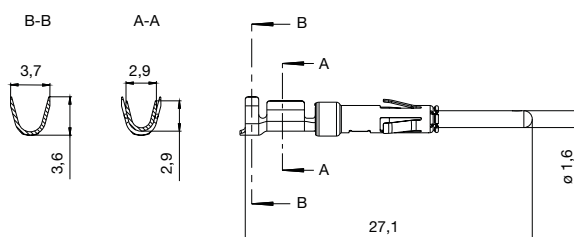


## Pin Crimp-Contacts 1,6 mm Standard

3000 contacts per reel

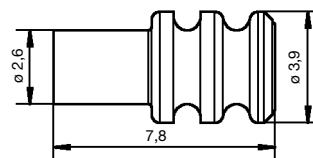
Designation	Order No.
0.32 - 0.5mm <sup>2</sup> - Tin plate - Loose Piece Bulk Pack	192900-0126
0.5 - 1.5 mm <sup>2</sup> - Tin plate - Loose Piece Bulk Pack	192900-0002
0.32 - 0.5mm <sup>2</sup> - 0.8μm Au plate - Loose Piece Bulk Pack	192900-0447
0.5 - 1.5mm <sup>2</sup> - 0.8μm Au plate - Loose Piece Bulk Pack	192900-0446
0.32 - 0.5mm <sup>2</sup> - Tin plate - reel	192900-0124
0.5 - 1.5mm <sup>2</sup> - Tin plate - Reel	192900-0000
0.32 - 0.5mm <sup>2</sup> - 0.8μm Au plate - Reel	192900-0405
0.5 - 1.5mm <sup>2</sup> - 0.8μm Au plate - Reel	192900-0404

Loose Piece Bulk Pack is 100 pcs.



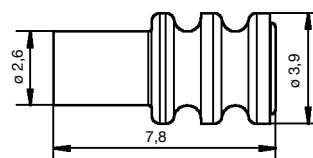
## Individual Wire Seals

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



## Wire Filler

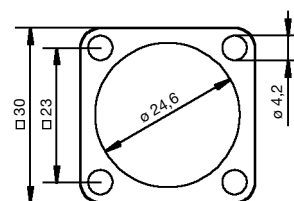
Designation	Order No.
10WH3940	121667-0025



## 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

ittcannon.com

# APD Accessories, 6/7-way



## Sealing Cap for Receptacle

Designation	Order No.
APD-DP	121583-0021

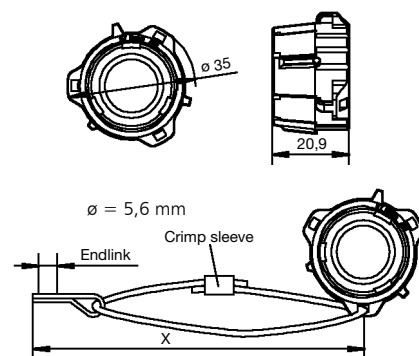
Packaging unit 100 pcs.

APD-DP with rope, end link and eyelet

X = Total rope length upon request

Order No.
120110-0026* X~9cm

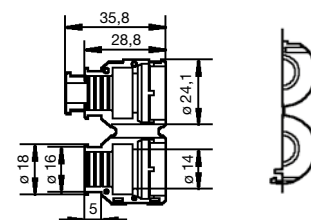
\* for other lengths please consult the factory



## Straight Endbell for Flex Tube

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

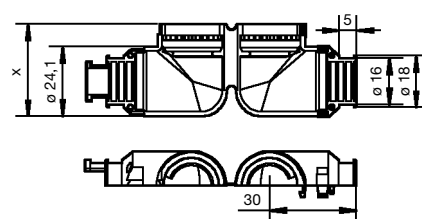
Packaging unit 100 pcs.



## 90° Endbell for Flex Tube

Order No.	Height x
058-8578-106 (ø 8,5 mm)	24
058-8578-101 (ø 8,5 mm)	32
058-8578-103 (ø 10,0 mm)	32
058-8578-105 (ø 11,0 mm)	32

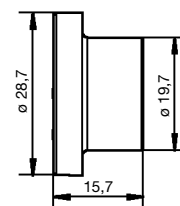
Packaging unit 100 pcs.



## Dust Cap for Plug

Order No.
025-8636-005

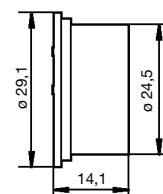
Packaging unit 100 pcs.



## Dust Cap for Receptacle

Order No.
025-0480-000

Packaging unit 100 pcs.



Dimensions shown in mm  
Specifications and dimensions subject to change

## APD Tooling for 6/7-way

Hand Tool for formed (stamped contacts)



Contact - Pin / Socket	Designation	Order No.
0,32-0,5mm <sup>2</sup>	CHT-Trident-16-18	121586-5236
0,5 - 1,5mm <sup>2</sup>	CHT-Trident-16-18	121586-5237

Crimp Machine Tool for formed (stamped contacts) (Mini Applicator)



Contact - Pin / Socket	Designation	Order No.
0,32-0,5mm <sup>2</sup>	WWZ-Mecal-20-26-EVS	121586-5239
0,75-1,5mm <sup>2</sup>	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



APD Sensor connectors are special 1-4-way versions based on the ISO 15170 4-way layout.

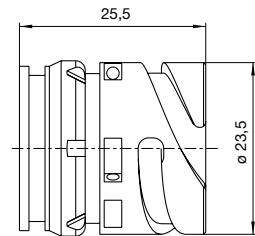
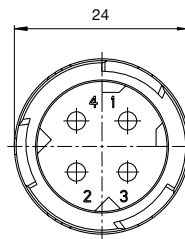
They are designed to be directly adapted to sensor housing and typically customized versions.

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

Typical Applications include:

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

## Sensor Connectors, Style 1



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

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

## Coding, Basic layouts\*

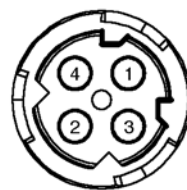
View on Mating Face



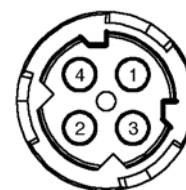
Code 1 black



Code 2 grey



Code 3 green

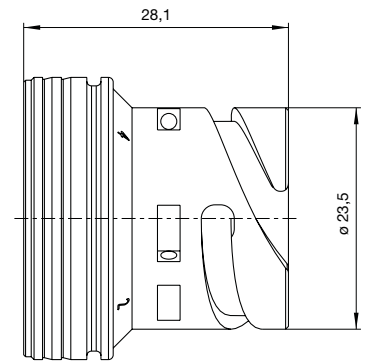
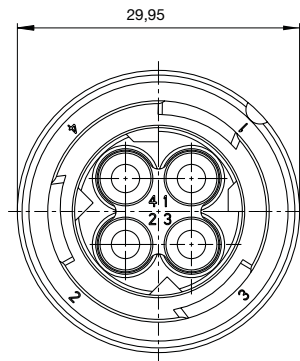


Code 4 blue

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

# APD Sensor Connectors

## Sensor Connectors, Style 2

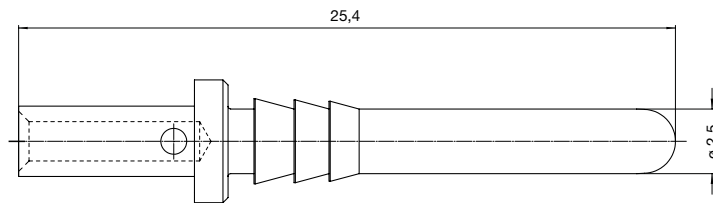


\* Pictures and drawings shown are examples.

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 No.	Plating	Crimp Wire Size
120110-0013	Tin	0,15 - 0,38mm <sup>2</sup>
120110-0011	Tin	0,5 - 1,0mm <sup>2</sup>
120110-0014	Tin	0,75 - 1,5mm <sup>2</sup>
120110-0242	Gold	0,15-0,38mm <sup>2</sup>
120110-0241	Gold	0,5-1,0mm <sup>2</sup>



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
- Lightning systems on Trucks and Trailers

Electrical Data	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	5 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

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

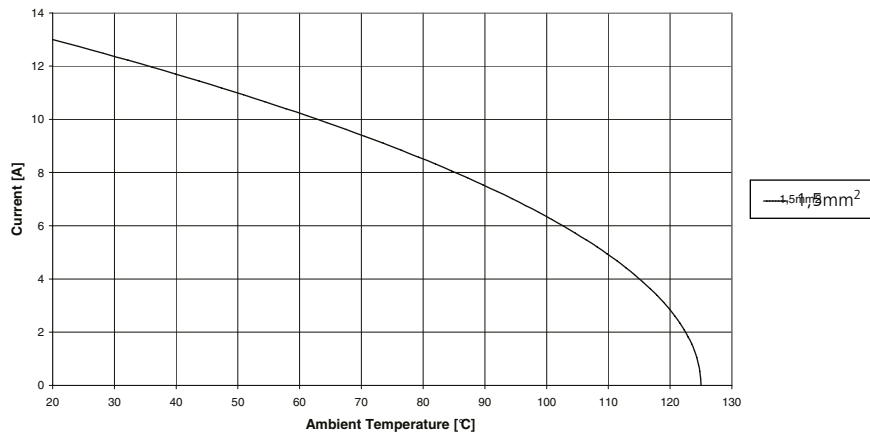
Environmental Data (acc. ISO 15170)	
<b>Temperature Range</b>	-40 °C up to 125 °C (ISO 15170-2, Sec. 6.4)
<b>Humidity Range</b>	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
<b>Sealing</b>	IP 67 + IP 69k (DIN EN 60529)
<b>Salt Spray</b>	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
<b>Industrial Climate</b>	SO <sub>2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

Materials List	
<b>Housing Parts</b>	PBT GF
<b>Sealing Parts</b>	FKM
<b>Coupling Nut</b>	PA 46 GF
<b>Contacts</b>	Copper Alloy, Au, Ag or Sn plated*

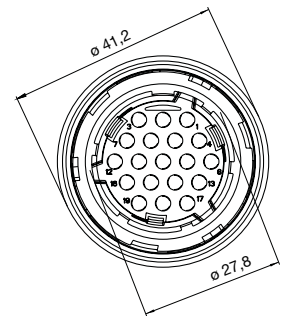
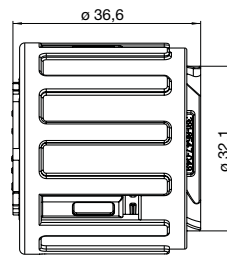
\* Further information available upon request.

# APD Plug, 19-way

## Derating Curve



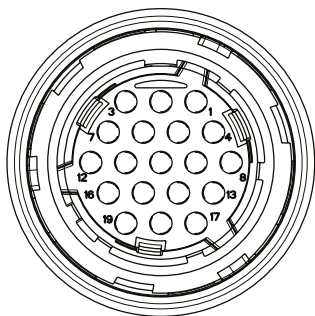
## Plug, 19-way



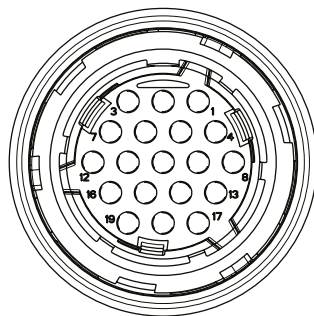
Order No.	Designation	Code	Color
121583-0119	APD-1BS19S	1	black (RAL 9005)
121583-0121	APD-2BS19S	2	grey (RAL 7036)
121583-0123	APD-3BS19S	3	green (RAL 6029)
121583-0125	APD-4BS19S	4	blue (RAL 5012)

Packaging unit 50 pcs.  
 Note: Each packaging unit includes one release tool.  
 Socket crimp contacts see page 48.  
 Accessories, see pages 49, 50, and 51.

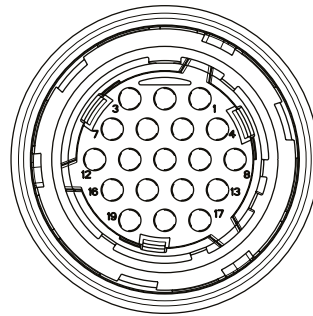
## Coding, 19-way layouts



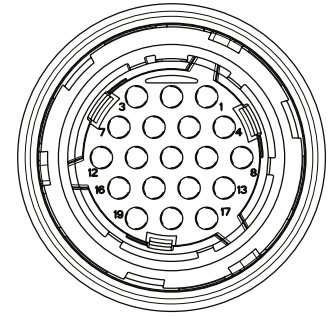
Code 1 black



Code 2 grey



Code 3 green

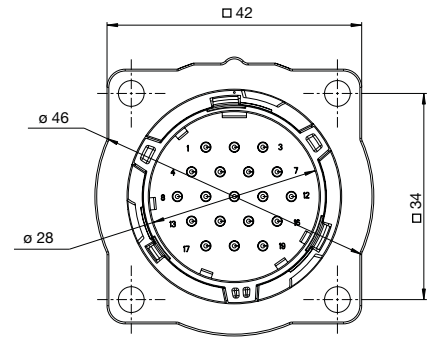
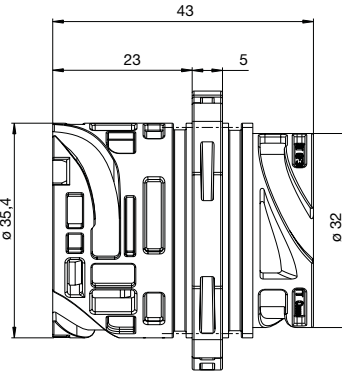


Code 4 blue

# APD Flange Receptacle, 19-way



## Flange Receptacle, 19-way



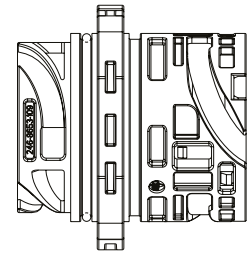
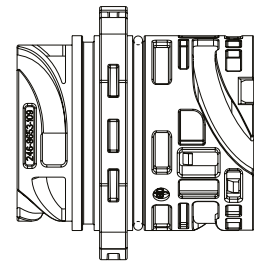
Order No.	Designation	Code	Color
121583-0120	APD-1AP19S	1	black (RAL 9005)
121583-0122	APD-2AP19S	2	grey (RAL 7036)
121583-0124	APD-3AP19S	3	green (RAL 6029)
121583-0126	APD-4AP19S	4	blue (RAL 5012)

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)

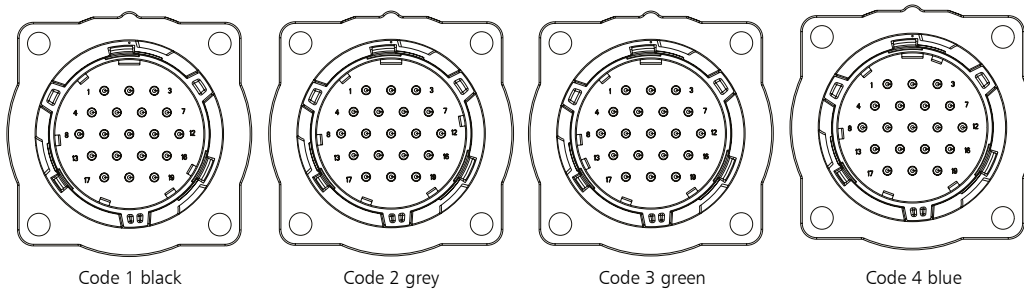
Version with o-ring for front panel mounting:

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)

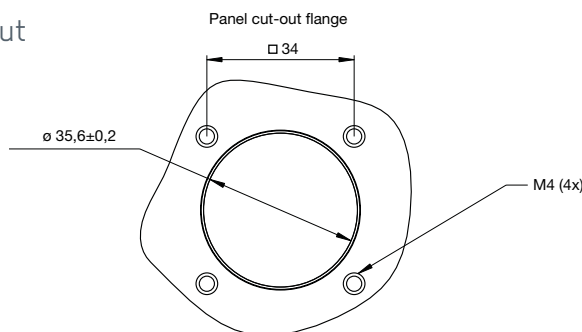


Packaging unit 50 pcs.  
 Note: Each packaging unit includes one release tool.  
 Pin crimp contacts see page 48.  
 Accessories, see pages 49, 50, and 51.

## Coding, 19-way layouts



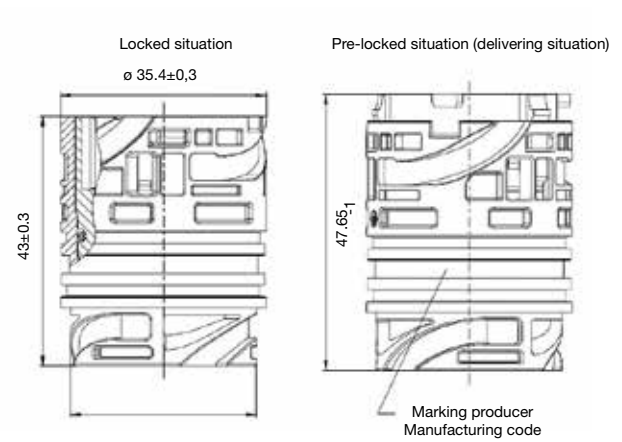
## Panel Cut Out



Dimensions shown in mm  
 Specifications and dimensions subject to change

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

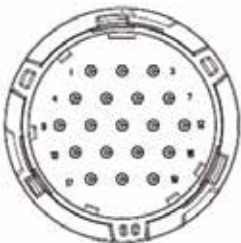
Wire-to-Wire Receptacle, 19-way



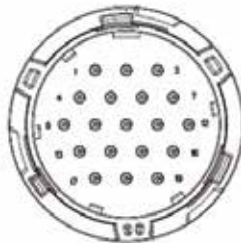
Order No.	Designation	Code	Color
121583-0135	APD-1BP19S	1	black (RAL 9005)
121583-0136	APD-2BP19S	2	grey (RAL7036)

\*Other colours and coding possible

## Coding, 19-way layouts



Code 1 black

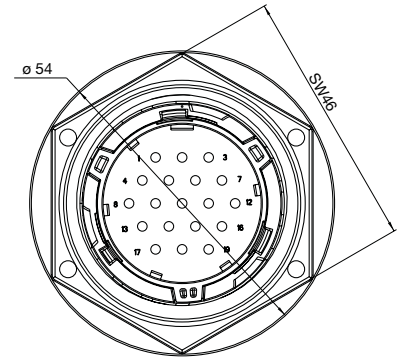
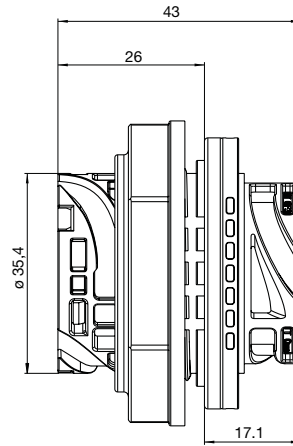
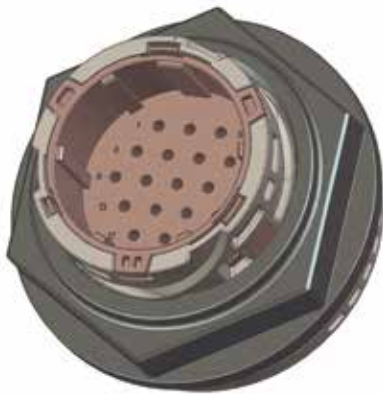


Code 2 grey

# APD Jam Nut Receptacle, 19-way



Jam Nut Receptacle, 19-way



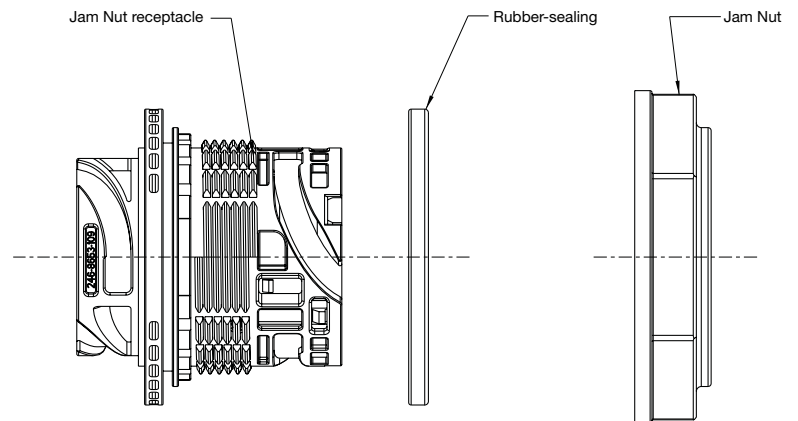
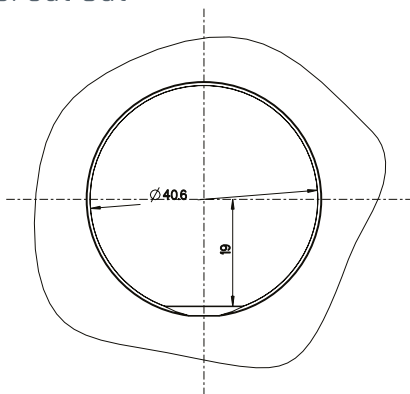
Order No.	Designation	Code	Color
Consult Factory	APD-1CP19S	1	black (RAL 9005)
Consult Factory	APD-2CP19S	2	grey (RAL 7036)
Consult Factory	APD-3CP19S	3	green (RAL 6029)
Consult Factory	APD-4CP19S	4	blue (RAL 5012)

Packaging unit 50 pcs.  
 Note: Each packaging unit includes one release tool.  
 Pin crimp contacts see page 48.  
 Accessories, see pages 49, 50, and 51.

## Coding, 19-way layouts

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

## Panel Cut Out



Dimensions shown in mm  
 Specifications and dimensions subject to change

# 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 mm <sup>2</sup>	APK-SA16A07-002	121668-0221	APK-SA16A07-002-B	121668-0274
		0,75 - 1,5 mm <sup>2</sup>	APK-SA16A15-002	121668-0202	APK-SA16A15-002-B	121668-0276
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-SA16G07-002	121668-0270	APK-SA16G07-002-B	121668-0278
		0,75 - 1,5 mm <sup>2</sup>	APK-SA16G15-002	121668-0272	APK-SA16G15-002-B	121668-0280
Pin contacts	tin	0,35 - 0,75 mm <sup>2</sup>	APK-PA16A07-002	121668-0252	APK-PA16A07-002-B	121668-0275
		0,75 - 1,5 mm <sup>2</sup>	APK-PA16A15-002	121668-0253	APK-PA16A15-002-B	121668-0277
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-PA16G07-002	121668-0269	APK-PA16G07-002-B	121668-0279
		0,75 - 1,5 mm <sup>2</sup>	APK-PA16G15-002	121668-0271	APK-PA16G15-002-B	121668-0281

## Machined Contacts

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

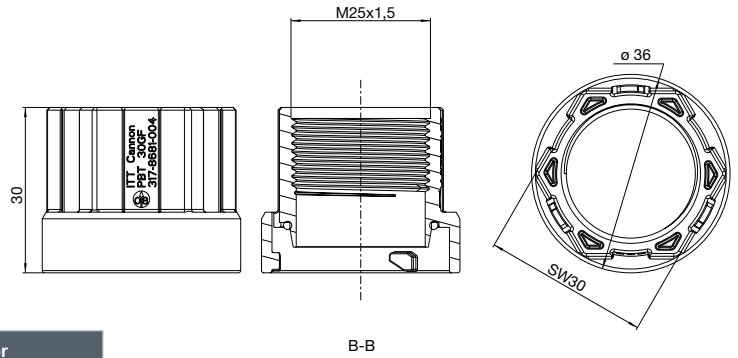
## Individual Wire Seals / Blind Seals

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

# APD Accessories, 19-way



## Endbell, 19-way



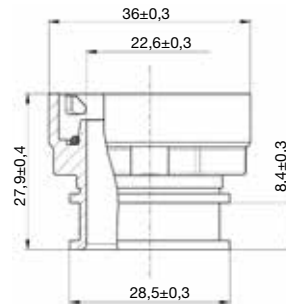
Order No.	Designation	Color
044-8597-002	Enbell for APD 19 version only	black (RAL 9005)

## Endbell Adapter, 19-way

For the use of standard 90° / Straight conduit accessories

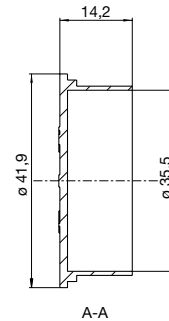
Order No.
044-8597-004*

\* Can be used in combination with PN 980-8672-034 and 980-8672-035. Further adapters available upon request.



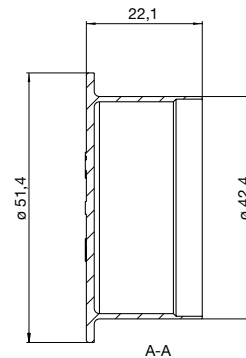
## Dust Cap for Plug

Order No.
025-8636-053



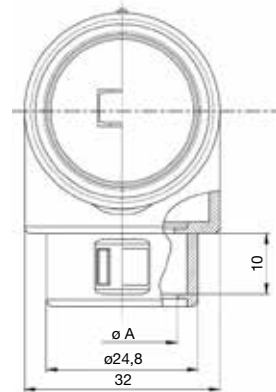
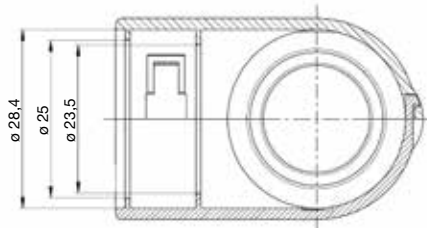
## Dust Cap for Receptacle

Order No.
025-0487-000



# APD Accessories 19-way

## 90° Endbell for Flex Tube

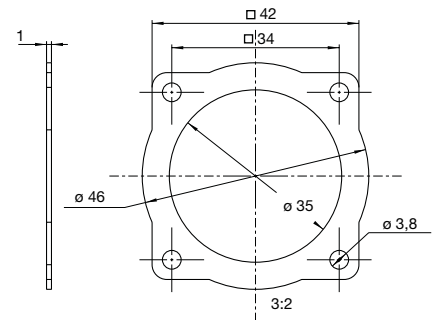
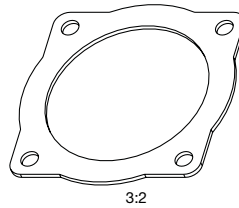


Order No.	Designation	Color	$\varnothing A$	Nominal Dimension of Conduit
980-8672-034	90° Endbell Adapter	black	18	17
980-8672-035	90° Endbell Adapter	black	14	13

Packaging unit 100 pcs.

## Flange Gasket, 19-way

Order No.
075-8566-003



## Tooling, 19-way

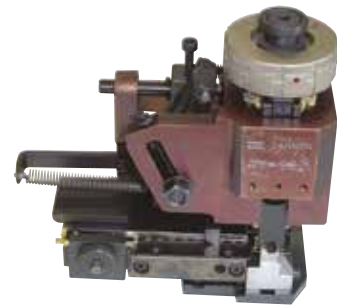
### Hand Crimp Tool for Stamped and Formed Contacts

Contact	Hand Tool	Crimp Die
0,35 - 0,75 mm <sup>2</sup>	121586-5156	121586-5260
0,75 - 1,5 mm <sup>2</sup>	121586-5156	121586-5197



### Mini Applicator for Stamped and Formed Contacts

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



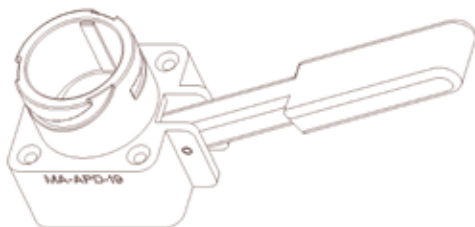
### Support Tools, 19-way

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



# Tooling, 19-way

## Hand Crimp Tool for Machined 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 Machined 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	Foot Pedal



## Assembly Tooling for Machined 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	
<b>Operating Voltage</b>	48 VDC*
<b>Operating Current</b>	see derating curve
<b>Contact Resistance</b>	5 mΩ max.
<b>Voltage Proof</b>	1000 VAC, 60 seconds
<b>Insulation Resistance</b>	10 MΩ min.

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

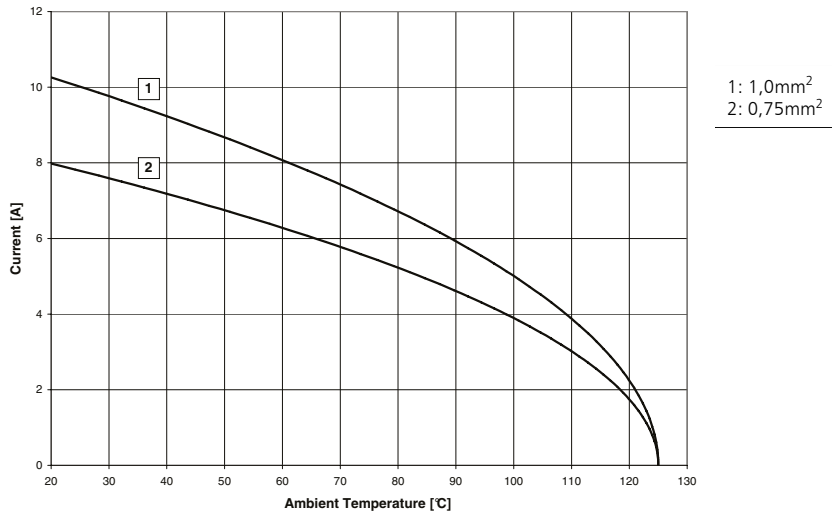
Environmental Data (acc. ISO 15170)	
<b>Temperature Range</b>	-40 °C up to 125 °C (ISO 15170-2, Sec. 6.4)
<b>Humidity Range</b>	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
<b>Sealing</b>	IP 67 + IP 69k (DIN EN 60529)
<b>Salt Spray</b>	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
<b>Industrial Climate</b>	SO <sub>2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

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

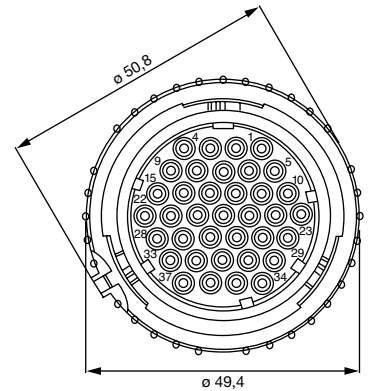
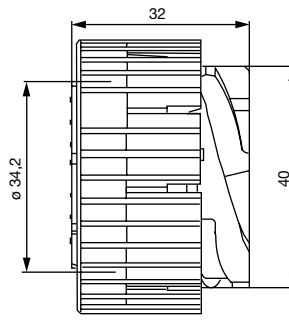
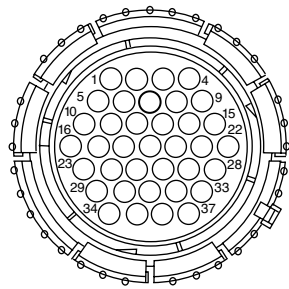
\* Further information available upon request.

# APD Plug, 37-way

## Derating Curve



## Plug, 37-way

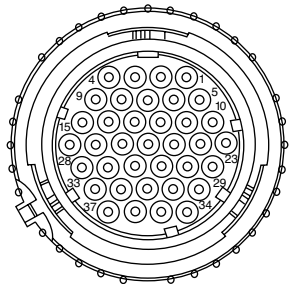


Order No.	Designation	Code	Color
121583-0058	APD-1BS37	1	black (RAL 9005)

Packaging unit 100 pcs.  
Socket crimp contacts see page 56.  
Accessories, see pages 56 and 57.

## Coding 37-way layout

View on Mating Face

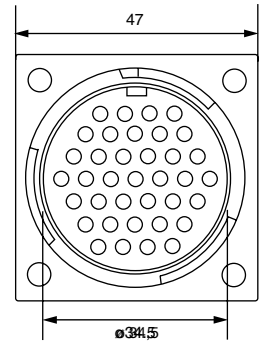
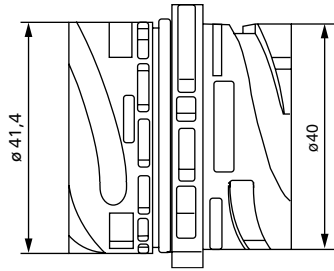
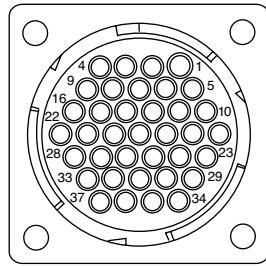


Note: Additional coding on demand.

# APD Flange Receptacle, 37-way



## Flange Receptacle, 37-way



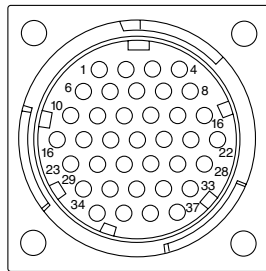
Order No.	Designation	Code	Color	Comment
249-8619-017	APD-1AP37-R	1	black (RAL 9005)	with O-ring
248-8653-026	APD-1AP37	1	black (RAL 9005)	without O-ring

Packaging unit 100 pcs.  
Pin crimp contacts see page 56.

Accessories, see pages 56 and 57.  
Note: Requires use of alignment disc.

## Coding 37-way layout

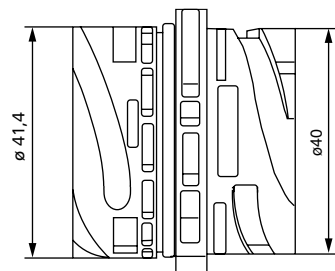
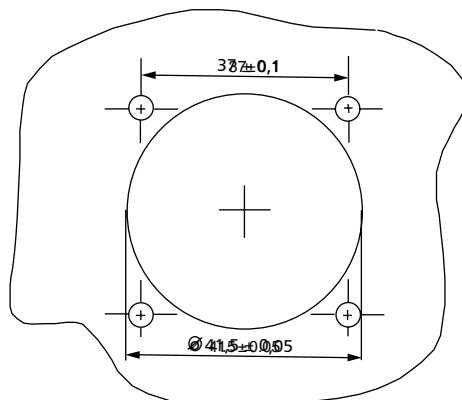
View on Mating Face



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).

# 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	Plating	Crimp Range	Designation	Part number
Socket contacts	tin	0,35 - 0,75 mm <sup>2</sup>	APK-SA16A07-002-C	121668-0220
		0,75 - 1,50 mm <sup>2</sup>	APK-SA16A15-002-C	121668-0222
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-SA16G07-002-C	121668-0266
		0,75 - 1,50 mm <sup>2</sup>	APK-SA16G15-002-C	121668-0268
Pin contacts	tin	0,35 - 0,75 mm <sup>2</sup>	APK-PA16A07-002-C	121668-0254
		0,75 - 1,50 mm <sup>2</sup>	APK-PA16A15-002-C	121668-0255
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-PA16G07-002-C	121668-0265
		0,75 - 1,50 mm <sup>2</sup>	APK-PA16G15-002-C	121668-0267

## Press-In Contacts (machined)

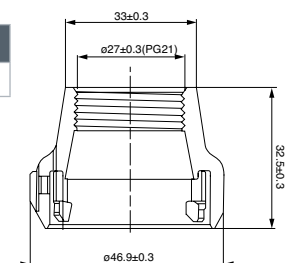
Contacts	Plating	Crimp Range	Designation	Part number
Pin contacts	tin	0,30 - 0,60 mm <sup>2</sup>	APK-PA16A06-E	330-8674-020
	gold (0,8 μm)	0,50 - 1,00 mm <sup>2</sup>	APK-PA16G10-E	330-8674-025

## 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)

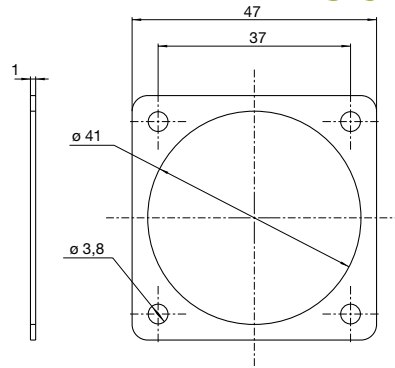


# APD Accessories, 37-way



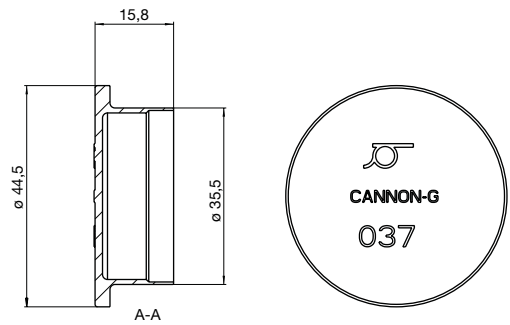
## Flange Gasket

Order No.
075-8566-004



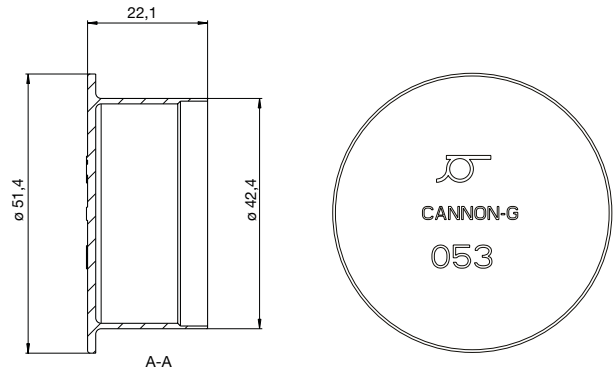
## Dust Cap for Plug

Order No.
025-8636-037



## Dust Cap for Receptacle

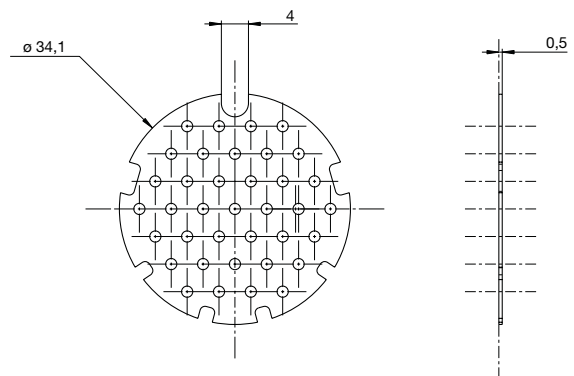
Order No.
025-8636-053



## 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

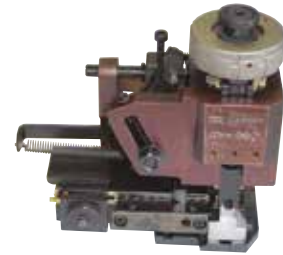
## Hand Crimp Tool for Stamped and Formed Contacts

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

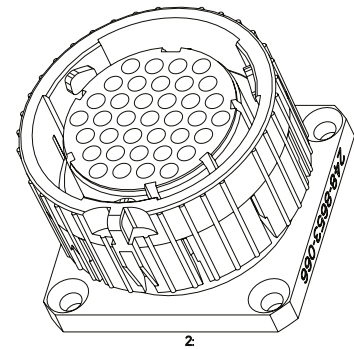
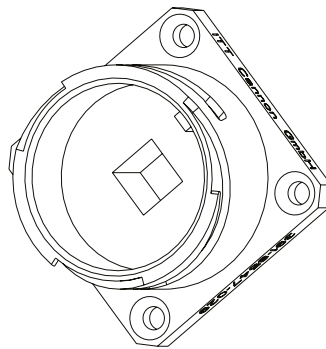


## Automatic Crimp Tooling for Stamped Contacts

Designation	Order No.	Description
0,35 - 0,75 mm <sup>2</sup>	121586-5131	WWZ-20-100-APK16-07-002
0,75 - 1,5 mm <sup>2</sup>	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	Foot 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, 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)

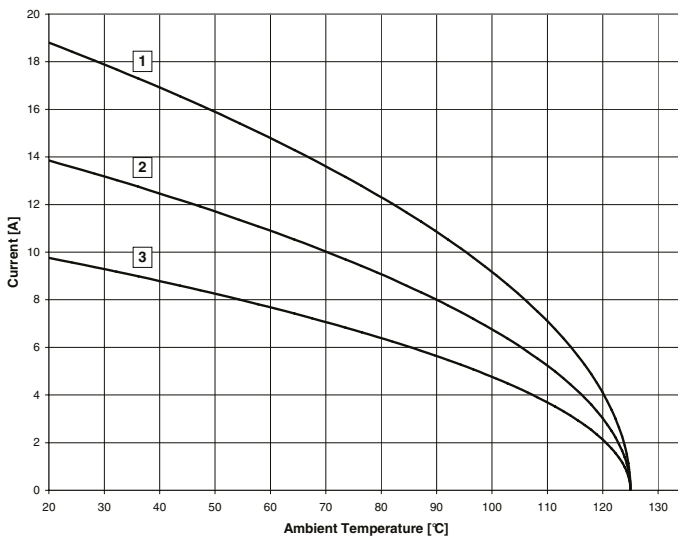
Environmental Data (acc. ISO 15170)	
Temperature Range	-40 °C up to 125 °C (ISO 15170-2, Sec. 6.4)
Humidity Range	up to 95 % r.h. (ISO 15170-2, Sec. 6.4)
Sealing	IP 67 + IP 69k (DIN EN 60529)
Salt Spray	96 h, 35 °C (ISO 15170-2, Sec. 6.2)
Industrial Climate	SO <sub>2</sub> , 0,67 % (ISO 15170-2, Sec.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

# APD Plug, 51-way

## Derating Curve



- 1: 1,5mm<sup>2</sup>
- 2: 0,75mm<sup>2</sup>
- 3: 0,35mm<sup>2</sup>

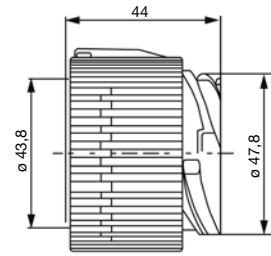
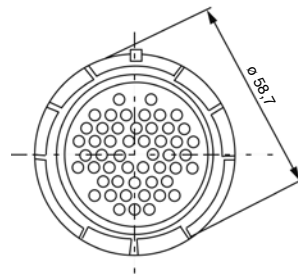


Dimensions shown in mm  
Specifications and dimensions subject to change

# APD Plug, 51-way



Plug, 51-way, Secondary Lock Version

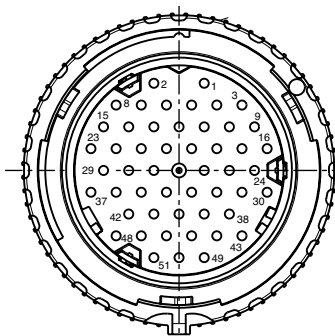


Order No.	Designation	Code	Color
121583-0187	APD-1BP51SN	1	green (RAL 6018)
121583-0188	APD-2BP51SN	2	yellow (RAL 1018)
121583-0189	APD-3BP51SN	3	brown (RAL 3009)
121583-0190	APD-4BP51SN	4	purple (RAL 4001)

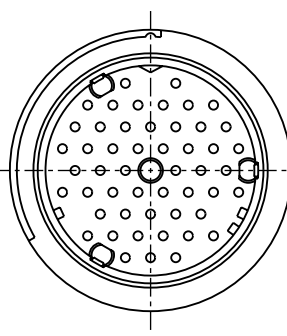
Packaging unit 100 pcs.

## Coding 51-way layout

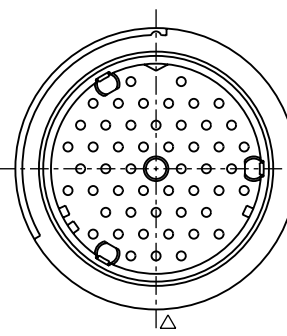
View on Mating Face



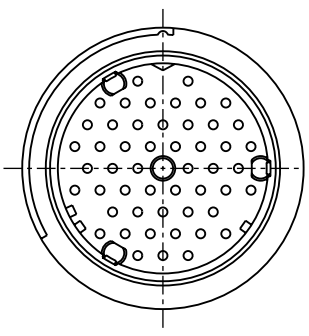
Code 1 green



Code 2 yellow



Code 3 brown

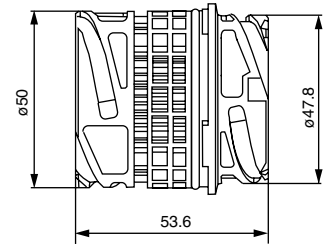
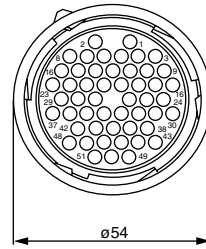


Code 4 purple

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

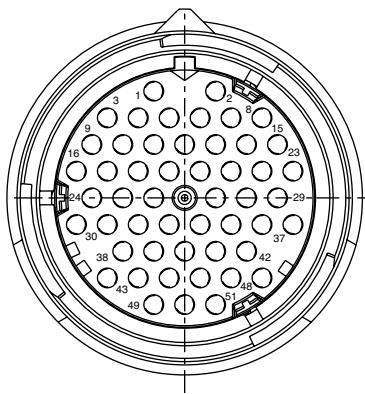


Order No.	Designation	Code	Color
121583-0091	APD-1SS51S	1	green (RAL 6018)
121583-0092	APD-2SS51S	2	yellow (RAL 1018)
121583-0093	APD-3SS51S	3	brown (RAL 3009)
121583-0094	APD-4SS51S	4	purple (RAL 4001)

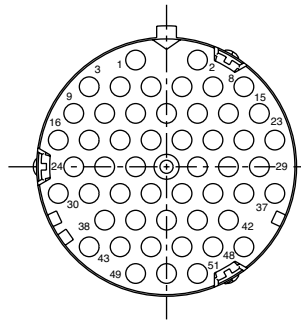
Packaging unit 100 pcs.

## Coding 51-way layout

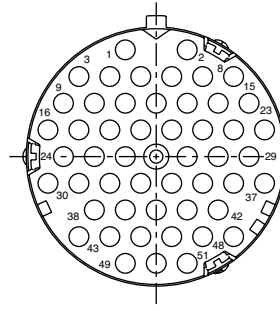
View on Mating Face



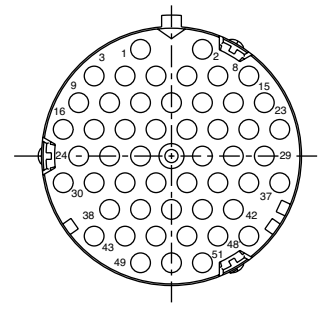
Code 1 green



Code 2 yellow



Code 3 brown



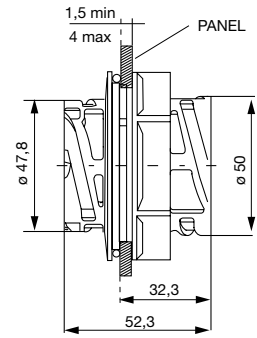
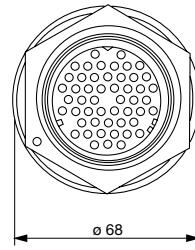
Code 4 purple

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

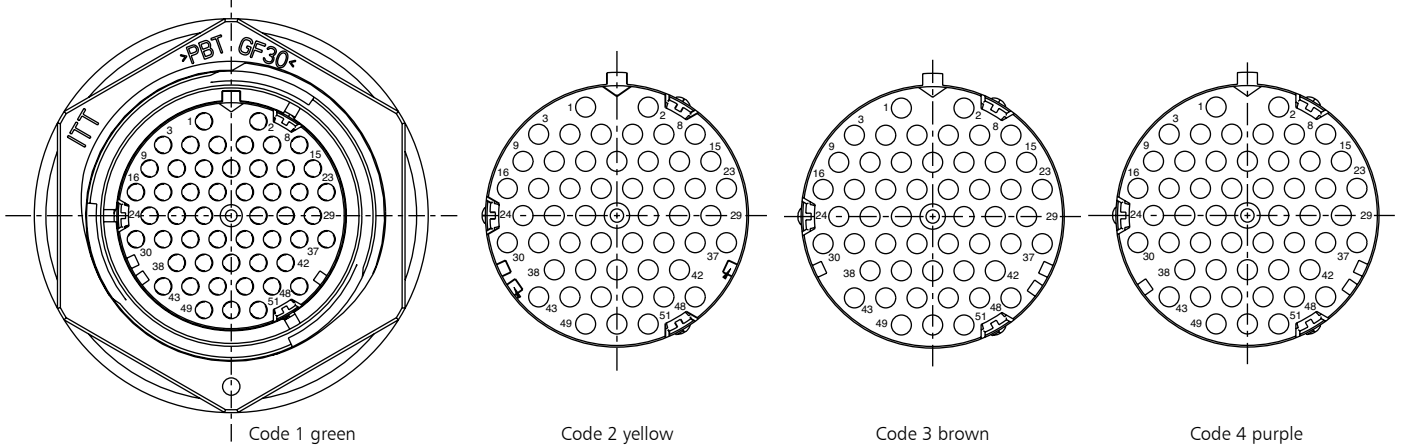


Order No.	Designation	Code	Color
121583-0095	APD-1CS51S	1	green (RAL 6018)
121583-0096	APD-2CS51S	2	yellow (RAL 1018)
121583-0097	APD-3CS51S	3	brown (RAL 3009)
121583-0098	APD-4CS51S	4	purple (RAL 4001)

Packaging unit 100 pcs.

## Coding 51-way layout

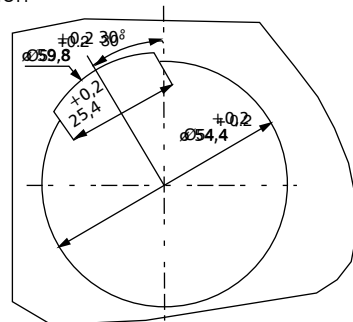
View on Mating Face



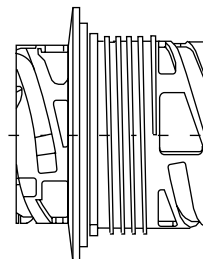
Note: The connectors offer both mechanical keying and visual coding by different colors.

## Panel Cut Out

Piece Parts / Assembly Instruction



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



Housing



O-Ring



Jam Nut

Dimensions shown in mm  
Specifications and dimensions subject to change



# 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

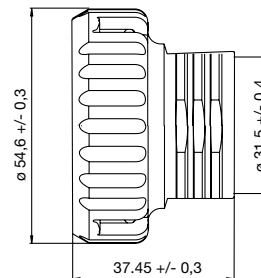
Contacts (stamped & formed)	Plating	Crimp Range	Reeled (5000 pcs)		Loose Piece (bags of 100)	
			Designation	Part number	Designation	Part number
Socket contacts	tin	0,35 - 0,75 mm <sup>2</sup>	APK-SA16A07-002	121668-0221	APK-SA16A07-002-B	121668-0274
		0,75 - 1,5 mm <sup>2</sup>	APK-SA16A15-002	121668-0202	APK-SA16A15-002-B	121668-0276
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-SA16G07-002	121668-0270	APK-SA16G07-002-B	121668-0278
		0,75 - 1,5 mm <sup>2</sup>	APK-SA16G15-002	121668-0272	APK-SA16G15-002-B	121668-0280
Pin contacts	tin	0,35 - 0,75 mm <sup>2</sup>	APK-PA16A07-002	121668-0252	APK-PA16A07-002-B	121668-0275
		0,75 - 1,5 mm <sup>2</sup>	APK-PA16A15-002	121668-0253	APK-PA16A15-002-B	121668-0277
	gold (0,8 μm)	0,35 - 0,75 mm <sup>2</sup>	APK-PA16G07-002	121668-0269	APK-PA16G07-002-B	121668-0279
		0,75 - 1,5 mm <sup>2</sup>	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	black (RAL 9005)

# APD Tooling, 51-way

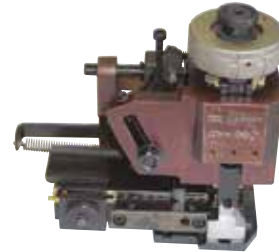


## Hand Crimp Tool for Stamped and Formed Contacts



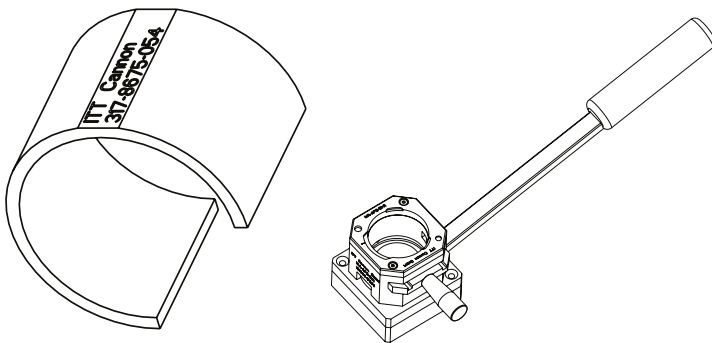
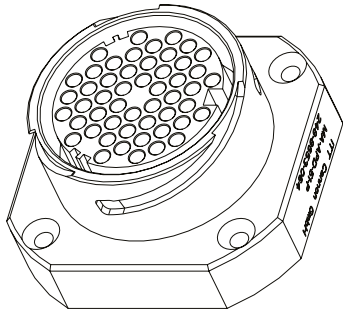
Contact	Hand Tool Order No.	Locator
0,35 - 0,75 mm <sup>2</sup>	121586-5156	121586-5260
0,75 - 1,5 mm <sup>2</sup>	121586-5156	121586-5197

## Mini Applications for Stamped and Formed Contacts



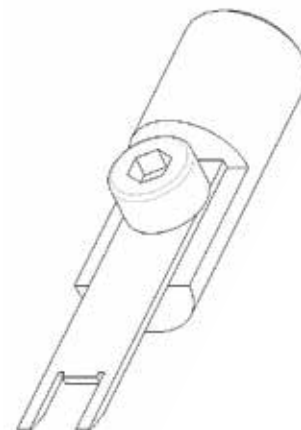
Contact	Order No.	Designation
0,35 - 0,75 mm <sup>2</sup>	121586-5131	WWZ-20-100-APK16-07-002
0,75 - 1,5 mm <sup>2</sup>	121586-5132	WWZ-20-100-APK16-15-002

## 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



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.

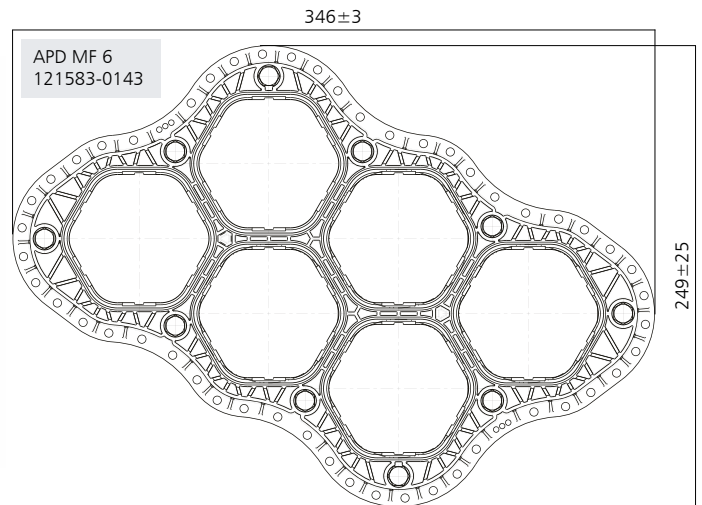
APD connectors with PCB contacts can be offered for most of our products shown in this catalog. This chapter will provide a first impression of technical features and benefits as well as examples of PCB connector solution.

## Technical Specifications

<b>Mechanical Data</b>	All PCB connectors are derived from standard APD lines and feature similar properties
<b>Electrical Data</b>	Depends on exact design of contacts and requirements of solution, generally similar to respective APD standard product
<b>Environmental</b>	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 definition of contact length – adaptation to application
- Pre-assembled versions can be delivered - avoids additional harnessing work
- Useable for printed flex board applications
- Increases reliability (no harness errors)
- Avoids additional harness costs and reduces complexity of total manufacturing process

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	
<b>Temperature Range</b>	-40°C to +85°C
<b>Water tightness</b>	IP54 / IP6K5 depending on mounting position
<b>Material</b>	Module: PBT GF10 Sealing of Module: HNBR Frame: PBT GF30 Frame Seal: TPE

# APM Technical Data, 4-way



The APM connector has been developed for transportation & off-road vehicle applications that require a simple, non-sealed, in-line and securely mated connector solution. The secondary lock, mechanical keying and the positive audible click ensures a ultra secure connection. The minimized diameter of plug connector will fit through an 11mm dia. opening and can be used in small diameter tubing.

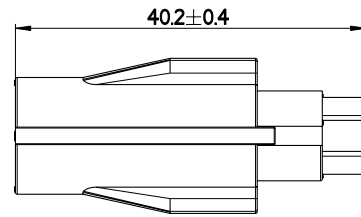
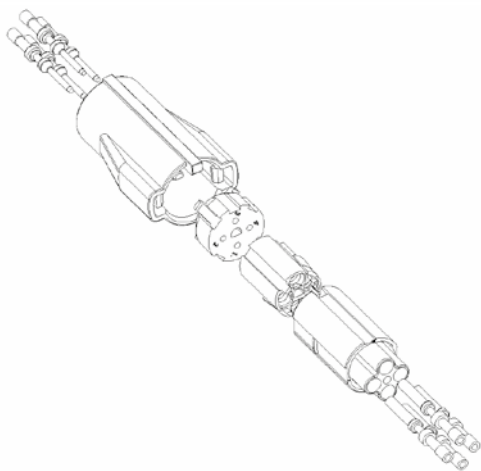
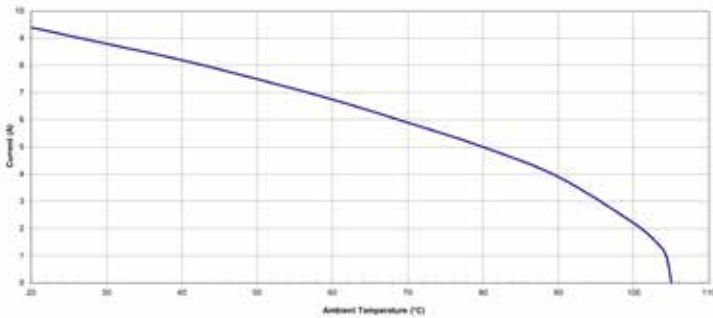
Applications for the 4-way include:

- Tractor cabs
- Vehicle lighting clusters
- Indicator lights
- Construction vehicle cabs
- Spotlight & work light applications

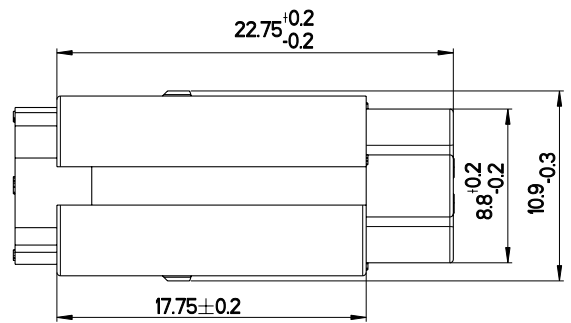
Technical Data*	
<b>Operating Voltage</b>	16 V DC
<b>Operating Current</b>	5 A @ 70°C
<b>Durability</b>	25 Mating Cycles
<b>Temperature Range</b>	-40 °C up to 105 °C
<b>Sealing</b>	IP 50
<b>Connector material</b>	PBT
<b>Contact material</b>	Copper alloy tinned, socket sleeve: stainless steel

\* Further information available upon request.

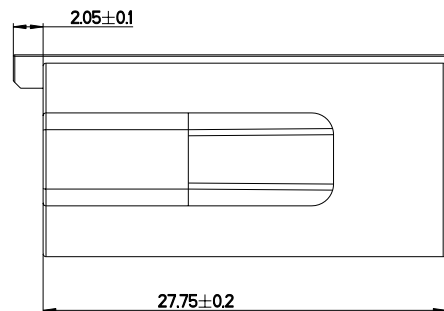
Derating Curve with 0.5 mm<sup>2</sup>



APM Mated Pair



APM Plug



APM Receptacle

Dimensions shown in mm  
Specifications and dimensions subject to change



# APM Technical Data, 4-way



## APM Plug 4-way

	Order No.	Designation	Color Coding
4-way, female	121667-0027	APM-4S	Yellow
4-way, female	121667-0045	APM-4S	Red

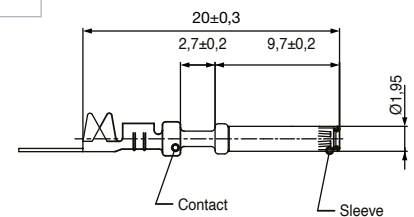
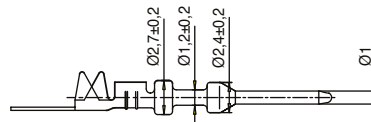
## APM Receptacle 4-way

	Order No.	Designation	Color Coding
4-way, male	121667-0026	APM-4P	Yellow
4-way, male	121667-0044	APM-4P	Red

# APM Contacts and Accessories

## APM Crimp-Contacts Tinned

	Order No.	Designation	
Socket stamped 0.4–0.75 mm <sup>2</sup>	121347-0100	MSS121347-100	On reel, 5000 pcs.
	031-8703-100	K.BUCH.EINZ.MSS-100	Loose Piece Bulk Pack
Pin stamped 0.4–0.75 mm <sup>2</sup>	121348-0100	MSS121348-100	On reel, 5000 pcs.
	330-8672-100	K.STIFT EINZ.MSS-100	Loose Piece Bulk Pack



## Hand Crimp Tool

Crimp Tool	Order No.	Pin Contact	Socket Contact
CCT-MSS/SS-20N	121086-3331	330-8672-100	031-8703-100



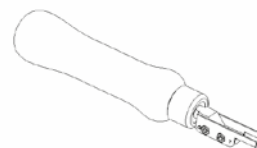
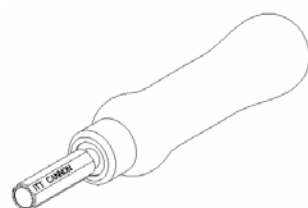
## Semi-automatic Crimp Tool

Crimp Tool	Order No.	Pin Contact	Socket Contact
WWZ-MECAL-MSS-EVS0946-J	121586-5214	121348-0100	121347-0100



## Assembly Tools

	Order No.	Designation
Hand assembly receptacle	317-8675-050	CIT-APM 4pol Pin
Hand disassembly receptacle	121586-5210	CET-APM 4pol Pin
Hand disassembly plug	121586-5209	CET-APM 4pol Socket



Dimensions shown in mm  
Specifications and dimensions subject to change



# APE Technical Data, 2-way and 3-way Plug



APE 2 and 3-way are single wire sealed inline connectors designed to protect against the harshest environmental conditions. They are highly resistant to contaminants, vibration and shock. Their low contact resistance provides excellent signal integrity, and they provide IP69K sealing levels.

## Applications:

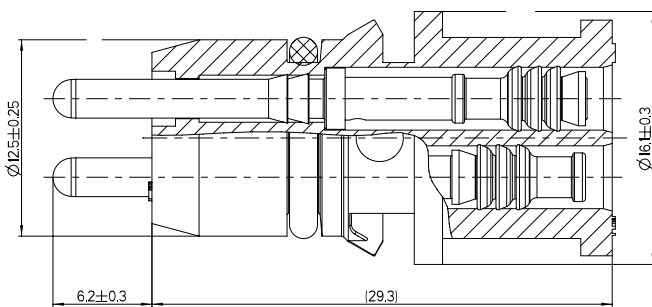
- ABS/EBS Brake Systems for Truck and Trailers

Technical Data*	
<b>Operating Voltage</b>	48 V dc max.
<b>Operating Current</b>	13 A
<b>Durability</b>	25 Mating Cycles
<b>Temperature Range</b>	-40 °C up to 125 °C
<b>Sealing</b>	IP 69K
<b>Max. vibration resistance</b>	100 m/s <sup>2</sup> at 10-500 Hz
<b>Connector material</b>	Thermoplastic

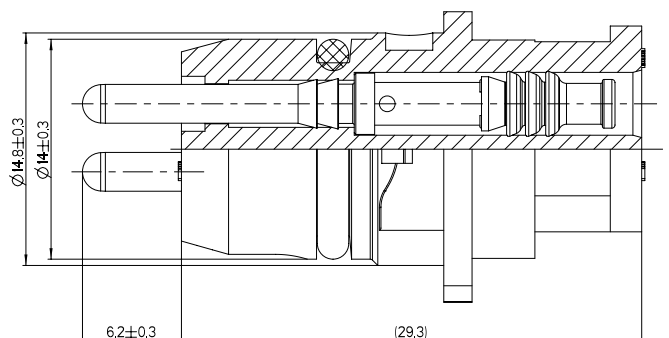
\* Further information available upon request.

## APE Plug

	Order No.	Designation
2-way	120110-0044	APE-P2P
3-way	120110-0045	APE-P3P



APE 2-way



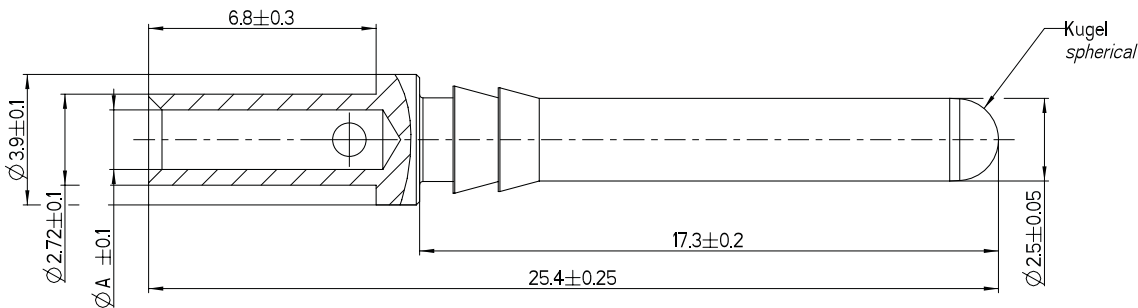
APE 3-way

# APE Contacts and Accessories



## APE Machined Press-in Contacts Silver Plated

Press In Contacts	Order No.	Designation	Wire Hole A	Loose Piece Bulk Pack
0.3-0.6 mm <sup>2</sup> (22/20 AWG)	330-8674-053	PIN Contact APE 0.3-0.6	1.2 mm	1000
0.75-1.5 mm <sup>2</sup> (18/16 AWG)	330-8674-013	PIN Contact APE 0.75-1.5	1.78 mm	1000



## Individual Wire Seals

Order No.	Isolation Diameter	Color	Packaging Unit
121667-0042	1.4 – 2.0 mm	Green	5000

## Hand Crimp Tool for Machined Contacts

Basic Hand Crimp Tool	Order No.
M22520/1-01	995-0001-585

Locator	Order No.
CT120090-163	120090-0163



## Automatic Crimp Tooling for Machined Contacts

Designation	Order No.	Description
WAZ7F-CE	121586-5067	Pneumatic Crimp
CT120090-163	120090-0163	Locator
BM-2	121586-5068	Bench Mount
WA-10	121586-5069	Foot Pedal



## Assembly Tooling for Machined Contacts

Designation	Order No.	Description
CHPZ-240	121586-0081	Hand Lever Press
CT120090-158	120090-0158	Assembly Device: APE 2-way
CT120090-159	120090-0159	Assembly Device: APE 3-way
CT121086-3210	121086-3210	Cable Holder
Insertion tip	317-8666-037	Spare part for assembly device



Dimensions shown in mm  
Specifications and dimensions subject to change

## APC Technical Data, 2-way, 4-way and 6-way



The APC connector series has been developed for automotive, industrial and entertainment markets that require a simple, non-sealed, flat in-line and securely mated connector solution. The secondary lock feature with clamp and the option for the 6 way mated connector pair to be mounted for protection against unwanted separation, ensure a ultra secure connection. The maximum connector height is only 7.5mm and this solution can be used with the 0.5 to 4 mm<sup>2</sup> APK25 contact system.

Application include:

- Tractor cabs
- Construction vehicle and devices
- Inside passenger Cars
- Spotlight & work light applications
- Industrial machines

Technical Data*	
<b>Operating Voltage</b>	48 V DC
<b>Operating Current</b>	30 A @ 25°C**
<b>Durability</b>	25 Mating Cycles
<b>Temperature Range</b>	-40 °C up to 120 °C
<b>Sealing</b>	IP 21
<b>Connector material</b>	PBT
<b>Contact material</b>	Copper alloy tinned

\* Further information available upon request.

\*\* with max. wire size.

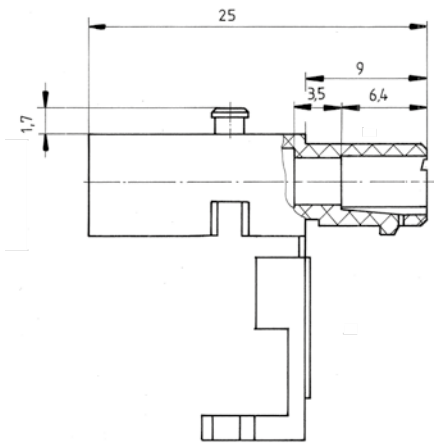
### APC Plug Connector

	Order No.	Designation
2-way	391-8544-002	APC-P2B25
4-way	391-8544-004	APC-P4B25
6-way	391-8530-016	APC-P6B25SW-002

### APC Receptacle Connector

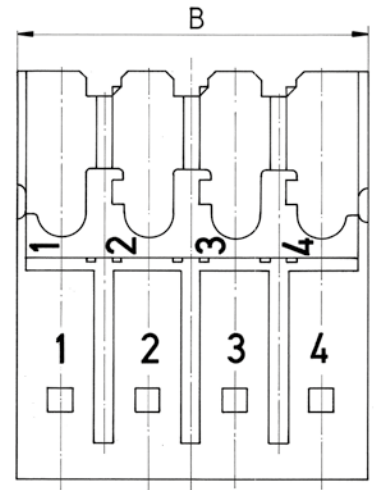
	Order No.	Designation
2-way	391-8543-002	APC-R2B25
4-way	391-8543-004	APC-R4B25
6-way	391-8531-016	APC-R6B25SW-002

# APC 2-way, 4-way and 6-way

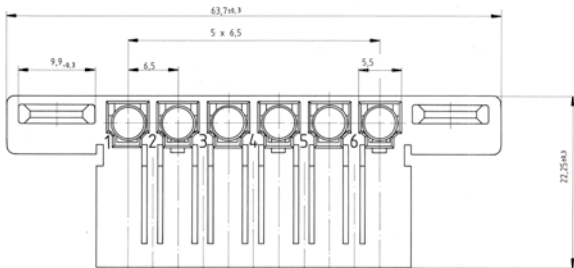


APC 2 and 4-way Plug

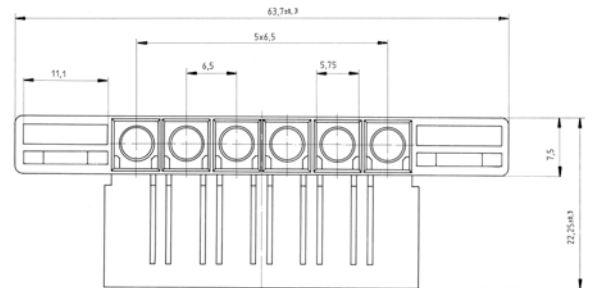
	B
2-way	14
4-way	28



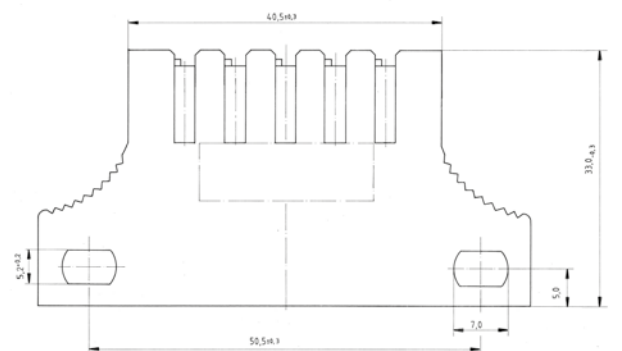
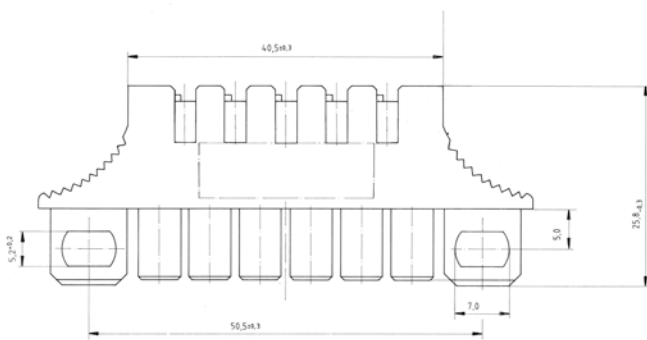
APC 2 and 4-way Receptacle



APC 6-way Plug



APC 6-way Receptacle

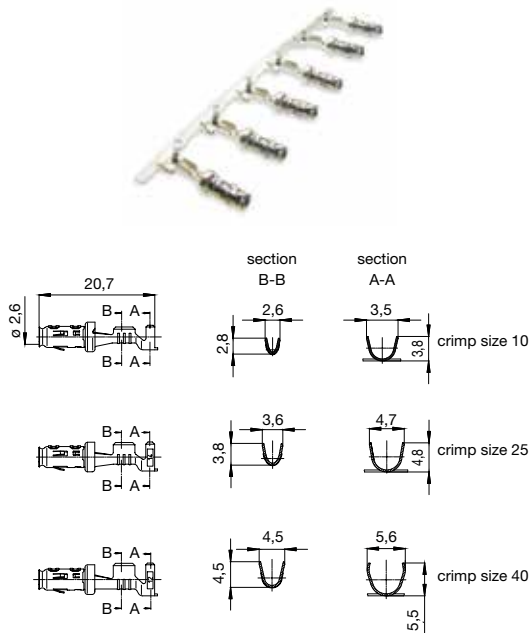


# APC Contacts and Accessories

## APC Socket Crimp-Contacts Tinned\*

Designation	Order No.	
APK-SB25A10 (0.5–1.0 mm <sup>2</sup> )	121668-0100	On Reel, 3000 pcs.
	031-8717-120	Loose Piece Bulk Pack
APK-SB25A25 (1.5–2.5 mm <sup>2</sup> )	121668-0101	On Reel, 3000 pcs.
	031-8717-121	Loose Piece Bulk Pack
APK-SB25A40 (2.5–4.0 mm <sup>2</sup> )	121668-0102	On Reel, 3000 pcs.
	031-8717-122	Loose Piece Bulk Pack

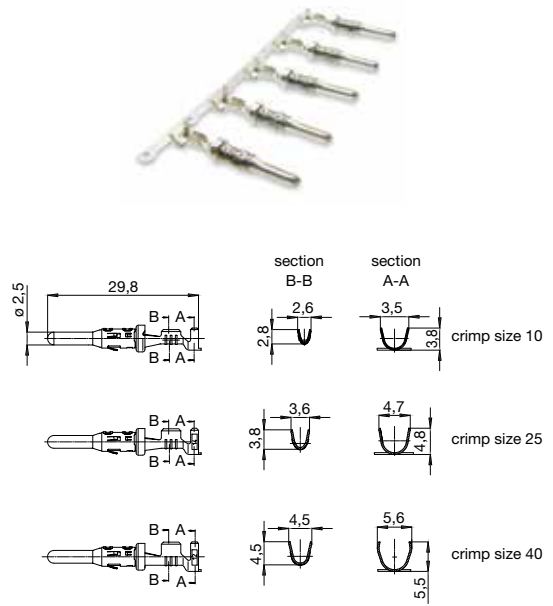
\* Further plating available upon request.



## APC Pin Crimp-Contacts Tinned\*

Designation	Order No.	
APK-PB25A10 (0.5–1.0 mm <sup>2</sup> )	121668-0000	On Reel, 3000 pcs.
	031-8717-020	Loose Piece Bulk Pack
APK-PB25A25 (1.5–2.5 mm <sup>2</sup> )	121668-0001	On Reel, 3000 pcs.
	031-8717-021	Loose Piece Bulk Pack
APK-PB25A40 (2.5–4.0 mm <sup>2</sup> )	121668-0002	On Reel, 3000 pcs.
	031-8717-022	Loose Piece Bulk Pack

\* Further plating available upon request.



## Hand Crimp Tool

Crimp Tool	Order No.	Wire Size
CHT-APK-25	121586-5241	0.5–4 mm <sup>2</sup>



## Semi-automatic Crimp Tool\*

Crimp Tool	Order No.	Pin Contact	Socket Contact
WWZ-20.100-APK 25-10	121586-5128	121668-0000	121668-0100
WWZ-20.100-APK 25-25	121586-5129	121668-0001	121668-0101
WWZ-20.100-APK 25-40	121586-5130	121668-0002	121668-0102

\* For spare parts please contact factory.



## Assembly Tool

	Order No.	Designation
Extraction Tool	121086-3278	CET-APK25



# 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.

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## 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.

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## 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<sup>2</sup>)

AWG	mm <sup>2</sup>	AWG	mm <sup>2</sup>	AWG	mm <sup>2</sup>
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

# APD Part Number Index



Order Number	Page	Order Number	Page	Order Number	Page
025-0480-000	15, 22, 32, 39	120110-0026	14, 22, 32, 39	121583-0097	63
025-0487-000	49	120110-0044	70	121583-0098	63
025-8636-005	15, 22, 32, 39	120110-0045	70	121583-0119	44
025-8636-037	57	120110-0075	64	121583-0120	45
025-8636-053	49, 57	120110-0083	37	121583-0121	44
030-8531-030	13	120110-0217	15, 22, 32, 38	121583-0122	45
030-8531-031	13	120110-0220	13	121583-0123	44
030-8531-032	13	120110-0221	13	121583-0124	45
030-8531-033	13	120110-0222	13	121583-0125	44
030-8581-029	12	120110-0229	13	121583-0126	45
030-8614-010	12, 16	120190-0163	40	121583-0127	45
030-8614-020	12, 16	121086-3210	71	121583-0128	45
030-8614-030	12, 16	121086-3278	33, 74	121583-0129	45
031-8521-010	12, 16	121086-3331	69	121583-0130	45
031-8521-020	12, 16	121347-0100	69	121583-0131	45
031-8521-030	12, 16	121348-0100	69	121583-0132	45
031-8531-010	13	121583-0000	25	121583-0133	45
031-8531-011	13	121583-0001	25	121583-0134	45
031-8531-012	13	121583-0002	25	121583-0135	46
031-8531-013	13	121583-0003	25	121583-0136	46
031-8646-001	21, 23	121583-0004	26	121583-0187	61
031-8646-002	21, 23	121583-0005	26	121583-0188	61
031-8646-003	21, 23	121583-0006	26	121583-0189	61
031-8646-010	21, 23	121583-0007	26	121583-0190	61
031-8646-011	21, 23	121583-0008	27	121583-0205	37
031-8646-015	12	121583-0009	27	121583-0211	35
031-8703-100	69	121583-0010	27	121583-0212	37
031-8717-020	74	121583-0011	27	121583-0213	29
031-8717-021	74	121583-0012	8	121583-0214	29
031-8717-022	74	121583-0013	8	121583-0215	30
031-8717-120	74	121583-0014	9	121583-0216	30
031-8717-121	74	121583-0015	9	121583-0217	10
031-8717-122	74	121583-0016	10	121586-0081	40, 53, 59, 66, 71
044-8597-000	56	121583-0017	10	121586-5067	53, 59, 66, 71
044-8597-002	49	121583-0018	35	121586-5068	53, 59, 66, 71
044-5897-004	49	121583-0019	36	121586-5069	53, 59, 66, 71
052-5809-003	64	121583-0020	37	121586-5075	23
052-8509-004	57	121583-0021	14, 22, 32, 39	121586-5077	23
058-8578-100	32, 39	121583-0025	18	121586-5128	74
058-8578-101	32, 39	121583-0026	18	121586-5129	74
058-8578-102	32, 39	121583-0027	19	121586-5130	74
058-8578-103	32, 39	121583-0028	36	121586-5131	51, 58, 65
058-8578-105	32, 39	121583-0042	8	121586-5132	51, 58, 65
066-8516-006	9, 18, 26, 30, 37	121583-0043	9	121586-5134	33
075-8503-000	14, 21, 31, 38	121583-0058	54	121586-5135	33
075-8503-004	14, 21, 31, 38	121583-0061	36	121586-5136	33
075-8566-003	50	121583-0083	18	121586-5149	23
075-8566-004	57	121583-0084	18	121586-5156	51, 58, 65
120090-0158	71	121583-0085	19	121586-5192	16
120090-0159	71	121583-0086	19	121586-5193	16
120090-0163	71	121583-0091	62	121586-5195	58
120090-0165	23	121583-0092	62	121586-5197	58
120090-0171	23	121583-0093	62	121586-5200	58
120110-0011	42	121583-0094	62	121586-5202	65
120110-0013	42	121583-0095	63	121586-5203	65
120110-0014	42	121583-0094	62	121586-5206	65
120110-0020	37	121583-0095	63	121586-5209	69
120110-0024	35	121583-0096	63	121586-5210	69



# APD Part Number Index

Order Number	Page	Order Number	Page	Order Number	Page
121586-5214	69	121668-0270	48, 64	391-8543-002	72
121586-5217	40	121668-0271	48, 64	391-8543-004	72
121586-5229	16	121668-0272	48, 64	391-8544-002	72
121586-5232	16	121668-0274	48, 64	391-8544-004	72
121586-5234	52	121668-0275	48, 64	430-8645-000	21, 23
121586-5235	52	121668-0276	48, 64	430-8645-002	21, 23
121586-5237	40	121668-0277	48, 64	430-8645-003	21, 23
121586-5241	74	121668-0278	48, 64	430-8645-007	21, 23
121586-5242	33	121668-0279	48, 64	430-8645-009	21, 23
121586-5249	33	121668-0280	48, 64	980-8672-004	14, 22
121586-5244	23	121668-0281	48, 64	980-8672-005	16, 23
121586-5253	16	192900-0000	38	980-8672-010	14, 22
121586-5257	16	192900-0001	38	980-8672-015	51
121586-5259	68	192900-0002	38	980-8672-016	51
121667-0022	38, 48, 56, 64	192900-0003	38	980-8672-017	51
121667-0023	38, 48, 56, 64	192922-1450	40	980-8672-018	51
121667-0024	38, 48, 56, 64	192990-7600	40	980-8672-019	51
121667-0025	38, 48, 56, 64	217-8516-001	10, 19, 27, 36	980-8672-020	51
121667-0026	69	217-8516-005	65	980-8672-021	51
121667-0027	69	217-8516-007	58	980-8672-034	50
121667-0042	71	248-8653-026	55	995-0001-507	52, 59
121667-0044	69	248-8653-031	41	995-0001-585	40, 52, 59, 71
121667-0045	69	248-8653-053	41		
121668-0000	74	248-8653-063	16, 23		
121668-0001	74	248-8653-066	58		
121668-0002	74	248-8653-105	41		
121688-0021	31	248-8653-106	41		
121688-0025	31	248-8653-134	41		
121668-0022	31	249-8619-005	11		
121668-0026	31	249-8619-006	11		
121668-0027	31	249-8619-007	20		
121668-0028	31	249-8619-010	16, 23		
121668-0029	31	249-8619-017	55		
121668-0032	31	317-8648-008	40, 52, 59		
121668-0033	31	317-8649-034	16, 23		
121668-0034	31	317-8666-037	71		
121668-0035	21	317-8675-050	69		
121668-0100	74	330-8672-100	69		
121668-0101	74	317-8675-054	65		
121668-0102	74	330-8672-019	36, 37		
121668-0124	31	330-8672-021	36, 37		
121668-0125	31	330-8674-013	71		
121668-0126	31	330-8674-053	71		
121668-0127	31	330-8674-020	56		
121688-0128	31	330-8674-025	56		
121688-0202	48, 64	331-8547-029	58		
121668-0220	56, 62	351-8697-000	21		
121668-0221	48, 64	351-8697-001	14		
121668-0222	56, 62	351-8697-002	14		
121688-0252	48, 64	351-8697-003	14		
121688-0253	48, 64	351-8697-004	14		
121668-0254	56, 62	351-8697-005	14		
121668-0255	56, 62	351-8697-007	21		
121668-0265	56, 62	351-8697-009	14		
121668-0266	56, 62	351-8697-010	21		
121668-0267	56, 62	351-8697-014	14		
121668-0268	56, 62	391-8530-016	72		
121668-0269	48, 64	391-8531-016	72		



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