ENVIRONMENTAL-D

D-subminiature Connectors

WATER & DUST
INGRESS PROTECTION
NEMA 250-1991
MIL-STD 1344
IEC 60529

www.connectpositronic.com

Catalog C-006 Rev A
Experience

- Founded in 1966
- Involvement in the development of international connector specifications through EIA®, IEC and ISO as well as PICMG®.
- Introduction of new and unique connector products to the electronics industry.
- Patent holder for many unique connector features and manufacturing techniques.
- Vertically integrated manufacturing – raw materials to finished connectors.

Technology

- Expertise with solid machined contacts provides a variety of high reliability connectors including high current density power connectors.
- Quality Assurance lab is capable of testing to IEC, EIA, UL, CUL, military and customer-specified requirements.
- In-house design and development of connectors based on market need or individual customer requirements.
- Internal manufacturing capabilities include automatic precision contact machining, injection molding, stamping, plating operations and connector assembly.
- Manufacturing locations in southwest Missouri, U.S.A. (headquarters); Puerto Rico, France, China, Singapore, and India. Total square footage: 407,441.

Support

- Compliance to a variety of international and customer specific environmental requirements.
- Large in-house inventory of finished connectors. Customer specific stocking programs.
- Factory direct technical sales support in major cities worldwide.
- One-on-one customer support from worldwide factory locations.
- World class web site.
- Value-added solutions and willingness to develop custom products with reasonable price and delivery.

Regional Headquarters

Springfield, MO  Auch, France  Singapore

Positronic Provides Complete Capability

Mission Statement

“To utilize product flexibility and application assistance to present quality interconnect solutions which represent value to customers worldwide.”

Products described within this catalog may be protected by one or more of the following US patents: #4,900,261  #5,255,580  #5,329,697  #6,260,266  #6,835,379  #7,115,002 Patented in Canada, 1992  Other Patents Pending

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Positronic Industries’ FEDERAL SUPPLY CODE (Cage Code) FOR MANUFACTURERS is 28198

Unless otherwise specified, dimensional tolerances are:
1) ±0.001 inches [0.03 mm] for male contact mating diameters.
2) ±0.003 inches [0.08 mm] for contact termination diameters.
3) ±0.005 inches [0.13 mm] for all other diameters.
4) ±0.015 inches [0.38 mm] for all other dimensions.
WIN-D STANDARD DENSITY SEALED
D-SUBMINIATURE, IMPROVED UNIBODY DESIGN
The WD Unibody design provides a one piece connector body providing superior sealing performance. Solder cup, straight and right angle (90°) printed board mount terminations. Five connector variants, 9-50 contacts. Size 20 contacts, professional level performance, IP67.

WIN-DD HIGH DENSITY SEALED
D-SUBMINIATURE, IMPROVED UNIBODY DESIGN
The WDD Unibody design provides a one piece connector body providing superior sealing performance. Solder cup, straight and right angle (90°) printed board mount terminations. Three connector variants, 15, 26 and 44 contacts, with more variants being tooled. Size 22 contacts, professional level performance, IP67.

WIN-D STANDARD DENSITY SEALED
D-SUBMINIATURE, LEGACY DESIGN
The WD legacy design uses high quality material and manufacturing techniques to provide sealing. Solder cup, straight and right angle (90°) printed board mount terminations. Two connector variants: 25 (male) and 50 (male) contacts. All other standard density connector variants are supplied as Unibody, see description above. Size 20 contacts, professional level performance, IP67.

WIN-DD HIGH DENSITY SEALED
D-SUBMINIATURE, LEGACY DESIGN
The WDD legacy design uses high quality material and manufacturing techniques to provide sealing. Solder cup, straight and right angle (90°) printed board mount terminations. Three connector variants: 44 (male), 62 and 78 contacts. All other high density connector variants are supplied as Unibody, see description above. Size 22 contacts, professional level performance, IP67.

WIN-D AND WIN-DD PRE-WIRED,
SEALED FREE CABLE, D-SUBMINIATURE
WD and WDD series connectors can be supplied pre-wired to provide a sealed, free cable connector option. Ten connector variants - standard density 9, 15, 25, 37, and 50; high density 15, 26, 44, 62 and 78. Can be used as a cable to cable or cable to fixed connector system.

ENVIRO-D, STANDARD DENSITY SEALED, CABLE CONNECTOR, REMOVABLE CRIMP CONTACTS, D-SUBMINIATURE
The EVD series utilizes rear connector grommets to provide a sealed connector for use with removable crimp contacts. Five connector variants, 9 through 50. Size 20 contacts; standard and thermocouple crimp contacts. Immersion per MIL-STD 810. Performance conforms to IP67, and applicable requirements of MIL-DTL-24308 and SAE AS39029.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
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*NEW!*

 DIMENSIONS ARE IN INCHES [MILLIMETERS].
 ALL DIMENSIONS ARE SUBJECT TO CHANGE.
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S A V E  T I M E  A N D  M O N E Y!

Let Positronic support you by cablizing your WD / WDD / EVD connector selection.

Cable Assembly Design Support

We work closely with customers to:

1. Design assemblies in accordance with customer specifications.
2. Prepare cablized connector configuration and performance specifications.
3. Design each system in accordance with applicable customer, domestic, and international standards.
4. Define and conduct performance and verification testing.

FOR MORE DETAILS CONTACT TECHNICAL SALES
OR VISIT OUR WEB SITE AT:
CONNECTPOSITRONIC.COM/CABLE-ASSEMBLIES
Electronic equipment is frequently used for outdoor or other applications requiring environmental protection. To answer industry’s demand for affordable connection systems compatible with environmental protection to IEC 60529 and NEMA 250-1991 performance requirements for electrical enclosures, Positronic has introduced three dust and water ingress protection connection systems.

**SYSTEM 1** is an enclosure mounted connector assembly. The connection system is designed for periodic electrical operation after being exposed to a variety of environmental conditions.

**SYSTEM 2** is an enclosure mounted connector assembly, which is coupled to a compatible free cable connector. The connection system is designed for continuous electrical operation while being subjected to varying environmental conditions.

**SYSTEM 3** is a cable to cable connection system designed for continuous electrical operation while subjected to varying environmental conditions.

An explanation of the dust and water ingress protection requirements as defined by IEC 60529 Degrees of Protection Provided by Enclosures, and NEMA 250-1991 Enclosures for Electrical Equipment, may be found in the Appendix section of this catalog. *(See section beginning on page 49)*

It is recommended that readers familiarize themselves with the technical information and ingress protection rating systems contained in the Appendix so that a better understanding of dust and water ingress protection connection systems can be achieved.
CONNECTION SYSTEM 1

FIXED ENCLOSURE MOUNTED CONNECTOR

Provides ingress protection in an unmated condition.

System 1 consists of an input/output connector mechanically mounted and sealed to an enclosure. The connector and enclosure together provide a degree of protection from dust and moisture in accordance with IEC or NEMA ingress protection requirements. The enclosure and connector may be exposed to dust, splashing water, rain, or limited water immersion during its use.

“Corrosion Protection” option is standard. When “Corrosion Resistance” is a requirement, the connector is equipped with stainless steel shells and jackscrews, and contacts plated 0.000030 inch [0.76 µ] gold over nickel.

**Typical part number:** WD15P5C7AT7U

*Panel mount sealing plate, inside wall enclosure mounting

O-ring

Enclosure, IEC or NEMA Type

Fixed Jackscrews

Interfacial Seal

Protective Cover

For information regarding IEC 60529 and NEMA 250-1991, see Appendix, page 49.
CONNECTION SYSTEM 2

FIXED ENCLOSURE MOUNTED CONNECTOR MATED TO FREE CABLE CONNECTOR

Provides ingress protection of connector system for continuous electrical operation.

This type of ingress protection can be achieved by selecting:

1. Fixed WD (page 13) OR WDD series (page 18)
2. Free cable pre-wired WD/WDD (page 33)
3. Free cable EVD series (page 41)

**Note:**
- *Panel mount sealing plate, inside wall enclosure mounting*

System 2 consists of a fixed input/output connector and a compatible free cable connector. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The fixed connector is selected from the connectors offered in System 1. The mating (free or cable) connector must be electrically, mechanically, and chemically compatible with the fixed connector. This requirement enables System 2 to provide the desired “Corrosion Resistance” or “Corrosion Protection” and maintain the degree of ingress protection IP67 as specified in IEC 60529.

The male connector of System 2 is always equipped with an interfacial seal.
SYSTEM 3

System 3 is a cable-to-cable interconnection system consisting of two free cable connectors. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The connectors must be electrically, mechanically, and chemically compatible with each other. This requirement enables System 3 to provide the desired level of “Corrosion Resistance” or “Corrosion Protection” and maintain the degree of ingress protection IP67 as specified in IEC 60529.

The male connector of System 3 is always equipped with an interfacial seal.

For information regarding IEC 60529 and NEMA 250-1991, see Appendix, page 49.
SYSTEM 3

System 3 is a cable-to-cable interconnection system consisting of two free cable connectors. The system is normally in operation and may be exposed to dust, splashing water, rain, limited water immersion or hose directed water.

The connectors must be electrically, mechanically, and chemically compatible with each other. This requirement enables System 3 to provide the desired level of “Corrosion Resistance” or “Corrosion Protection” and maintain the degree of ingress protection IP67 as specified in IEC 60529.

The male connector of System 3 is always equipped with an interfacial seal.

For information regarding IEC 60529 and NEMA 250-1991, see Appendix, page 49.
WD SERIES UNIBODY DESIGN
ENVIRONMENTAL SEALING FEATURES

FEATURES:
- Popular, economical option for applications requiring sealed connectors.
- One piece Unibody connector insert eliminates need for secondary sealing processes.
- Improved temperature range, increased performance, and lower cost.

WD SERIES LEGACY DESIGN
ENVIRONMENTAL SEALING FEATURES

ENCLOSURE MOUNTED CONNECTORS
SYSTEMS 1 AND 2

PRE-WIRED CABLE CONNECTORS
SYSTEMS 2 AND 3

Information regarding the SEALING DESIGN FEATURES of the EVD series on page 38.
## Connectors Designed To Customer Specifications

Positronic’s WD / WDD / EVD connectors can be modified to customers specifications.

*Examples:* select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware.

*Contact Technical Sales with your particular requirements.*

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### GENERAL INFORMATION

**Connectors Designed To Customer Specifications**

**Positronic’s WD / WDD / EVD connectors can be modified to customers specifications.**

*Examples:* select loading of contacts for cost savings or to gain creepage and clearance distances; longer printed circuit board terminations; customer specified hardware.

*Contact Technical Sales with your particular requirements.*
INFORMATION RELATIVE TO COUPLING OF WD, WDD AND EVD SERIES CONNECTORS

RECOMMENDED COUPLING DIMENSION TO ENSURE WATER AND DUST INGRESS PROTECTION

<table>
<thead>
<tr>
<th>SHELL SIZE</th>
<th>SERIES WD, EVD</th>
<th>WDD</th>
<th>G MIN.</th>
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<td>[5.61]</td>
<td>[6.38]</td>
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Jackscrew systems not shown for clarity

0.080 [2.0] Max.
Enclosure wall shown for reference

Composite hood not shown.

WD25P5C7AT7S
WDD15F220Z40

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
Connectors Conforms to:
- IP 67 per IEC 60529
- IEC 60807-2, Performance Level 2
- UL File # E49351
- CSA File # LR 54219

Telecommunication:
- UL File # E140980

TECHNICAL CHARACTERISTICS

ENVIRONMENTAL CHARACTERISTICS:
WIN-D series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures.

WIN-D Connector Panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-D connector enclosure assemblies provide dust and water ingress protection to IP67. Refer to Appendix A for details of IP 67 ratings and NEMA enclosure types 6 and 4X, as well as other IEC and NEMA enclosures having less stringent environmental requirements.

ENVIRONMENTAL TEST SPECIFICATIONS:
Applicable IEC Moisture Tests:
IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. Requirements: No water to have penetrated enclosure through connector.

continued on next page...
continued from previous page . . .

IP67 IEC 60529, Test 14.2.7: Temporary immersion, 1.0 meter for 30 minutes. Requirements: No water to have penetrated enclosure through connector.

Applicable IEC Connector Tests After Moisture Conditioning Has Been Performed:
IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof
Requirements:
• It is recommended that connectors be tested in the specific application.
• Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:
Connector Insert: Nylon resin, UL 94V-0 black color.
Contacts: Precision machined copper alloy.
Contact Plating:
   Corrosion Protection: Gold flash over nickel plate.
   Corrosion Resistant: Gold plate 0.000030 inch [0.76 µ] over nickel plate.
Sheels, Jackscrew Systems and Cul-de-sac Mounting Accessories:
   Corrosion Protection: Steel, zinc plated with chromate seal.
   Corrosion Resistant: Stainless steel passivated.
Push-on Fasteners:
   Angle Brackets: Brass, zinc plate with chromate seal.
   Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene® or equivalent.
Panel Mount Sealing Plate Assembly:
   Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.
   Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene® or equivalent.
   Interfacial Seal: Interfacial Seal: Glass filled thermoplastic with elastomer O-ring. Shell size 3, 4, and 5 male connectors contain stainless steel support strip.

MECHANICAL CHARACTERISTICS:
Size 20 Fixed Contacts: Male contact - 0.040 inch [1.02 mm] mating diameter. Female contact – rugged open entry design.
Contact Retention in Insulator: 6 lbs. [27N]
Contact Terminations:
   Solder cup contacts – 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm²] wire maximum.
   Straight printed board mount – 0.028 inch [0.71 mm] termination diameter.
   Right angle (90°) printed board mount – 0.028 inch [0.71 mm] termination diameter for all printed board contact footprints.
Coding (keying): Trapezoidally shaped shells.
Enclosure Mounting Accessories:
   Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.
   Inside Wall Enclosure Mount: Minimum thickness 0.040 inch [1.02 mm]. Maximum thickness 0.080 inch [2.03 mm].
   Jackscrews.
Locking Systems: 500 operations minimum per IEC 60512-5.
Mechanical Operations: 500 operations minimum.
Plate Mounting Torque: 1.75 in-lb. [0.20 Nm] minimum.
   2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:
Contact Current Rating: 7.5 amperes nominal.
Initial Contact Resistance: 0.008 ohms maximum.
Insulator Resistance: 5 G ohms.
Clearance and Creepage Distance Minimum: 0.039 inch [1.0mm].
Proof Voltage: 1000 V r.m.s.
Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:
Temperature Range: -40°C to +125°C
CONTACT VARIANTS *
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

WD 9
Available with male and female contacts

WD 15
Available with male and female contacts

WD 25
Currently available with female contacts. For male contact variants, see page 21.

WD 37
Available with male and female contacts

WD 50
Currently available with female contacts. For male contact variants, see page 21.

* If a variant is not listed above, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 21.

For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 2

OUTSIDE WALL ENCLOSURE MOUNT
Not available in Unibody design.
See Unique Feature section, page 46.

INSIDE WALL ENCLOSURE MOUNT

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 3, 0.150 [3.81] CONTACT EXTENSION

OUTSIDE WALL ENCLOSURE MOUNT
Not available in Unibody design.
See Unique Feature section, page 46.

INSIDE WALL ENCLOSURE MOUNT
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 5, 0.188 [4.78] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT

Fixed female jackscrews

Enclosure shown for reference only

O-ring seal

0.080 [2.03] max. panel thickness

0.150 [3.81]

Typical Part Number: WD15P5C7AT7U

Numbering shown is rear view of male and face view of female connector

Cul-de-sac style threaded rivet

Push-on fastener, beryllium copper

Typical Part Number: WD50F5C7AT7U

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

SUGGESTED PRINTED BOARD HOLE SIZES:
Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners.
Suggest 0.045 [1.14] Ø hole for contact termination positions.

DIMENSIONS ARE IN INCHES [MILLIMETERS]. ALL DIMENSIONS ARE SUBJECT TO CHANGE.
**ORDERING INFORMATION - CODE NUMBERING SYSTEM**

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† Unibody is the preferred design. If a variant is not listed in Step 2, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 21.

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<td>A</td>
<td>T7</td>
<td>SU</td>
<td>/AA</td>
<td></td>
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</table>

† STEP 2 - CONNECTOR VARIANTS
- 9 - Male and Female
- 15 - Male and Female
- 25 - Female only
- 37 - Male and Female
- 50 - Female only

STEP 3 - CONNECTOR GENDER
- P - Male with interfacial seal
- F - Female

*2STEP 4 - CONTACT TERMINATION TYPE
- 2 - Solder cup
- 3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
- 5 - Solder, right angle (90°) printed board mount, contact extension 0.188 [4.78].

*1STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES
- C5 - Inside wall mounting for Code 2 and 3 (step 4) only.
- C7 - Inside wall mounting for Code 5 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener.
- C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

**STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE**
- A - Inside wall enclosure mounted connector.

**STEP 7 - FEMALE FIXED JACKSCREWS**
- T7 - Always used when ordering C5, C7 and C8 (Step 5).

**STEP 8 - SHELLS AND ACCESSORY OPTIONS**
- **U** - Corrosion Protected Unibody Design
  - Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
- **SU** - Corrosion Resistant Unibody Design
  - Stainless steel shells and jackscrews
  - Contacts 0.000030 inch [0.76µ] gold plated over nickel.

**STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS**
- /AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WD9F2C5AT7SU

**STEP 10 - SPECIAL OPTIONS**
- CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

NOTE: For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.

*2 See pre-wired ordering information, page 33, for free/cable connectors.

Do you need 2-D drawings or 3-D models? See page 10 for more information
Popular, economical, high density option for applications requiring sealed connectors.

One piece Unibody connector insert eliminates need for secondary sealing processes. See page 6 for details.

Improved temperature range, increased performance, and lower cost.

Fixed, size 22 contacts

Terminations include solder cup, straight and right angle (90°) printed board mount. See pre-wired ordering information (page 33) for free/cable connectors.

Three connector variants include 15, 26 and 44, with more being tooled. See WDD section (page 26) for all other high density sizes.

Corrosion protected and corrosion resistant options.

A wide variety of options and accessories.

Connectors Conforms to:
- IP 67 per IEC 60529
- UL File # E49351
- CSA File # LR 54219

Telecommunication:
- UL File # E140980

ENVIRONMENTAL CHARACTERISTICS:

WIN-DD series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures.

WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-DD connector enclosure assemblies provide dust and water ingress protection to IP67. Refer to Appendix A for detail of IP 67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

ENVIRONMENTAL TEST SPECIFICATIONS:

Applicable IEC Moisture Tests:

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. Requirements: No water to have penetrated enclosure through connector.

continued on next page...
IP67 IEC 60529 Test 14.2.7: Temporary immersion, 1.0 meter for 30 minutes. Requirements: No water to have penetrated enclosure through connector.

Applicable IEC Connector Tests After Moisture Conditioning Has Been Performed:
- IEC 60512-2, Test 3a: Insulation Resistance
- IEC 60512-2, Test 4a: Voltage proof

Requirements:
- Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.
- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:
- Connector Insert: Nylon resin, UL 94V-0 black color.
- Contacts: Precision machined copper alloy
- Contact Plating: Gold flash over nickel plate.
- Corrosion Protection: Gold plate 0.000030 inch [0.76 µ] over nickel plate.
- Shell, Jackscrew Systems and Cul-de-sac Mounting Accessories:
  - Corrosion Protection: Steel, zinc plated with chromate seal.
  - Corrosion Resistant: Stainless steel passivated.
- Push-on Fasteners: Phosphor bronze with tin plate.
- Angle Brackets: Brass, zinc plate with chromate seal.
- Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene™ or equivalent.
- Panel Mount Sealing Plate Assembly: Glass filled thermoplastic with elastomer O-ring.
- Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:
- Size 22 Fixed Contacts: Male contact - 0.030 inch [0.75 mm] mating diameter. Female contact - rugged open entry design.
- Contact Retention in Connector insert: 6 lbs. [27N]
- Contact Terminations: Solder cup contacts – 0.035 inch [0.89 mm] minimum hole diameter for 22 AWG [0.3 mm²] wire maximum. Straight printed board mount – 0.020 inch [0.51 mm] terminal diameter. Right angle (90°) printed board mount contact terminations 0.030 inch [0.76 mm] terminal diameter.
- Coding (keying): Trapezoidally shaped shells.
- Enclosure Mounting Accessories: Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.
- Inside Wall Enclosure Mount: Minimum thickness 0.040 inch [1.02 mm]. Maximum thickness 0.080 inch [2.03 mm]. Jackscrews.
- Locking Systems: Mechanical Operations: 500 operations minimum per IEC 60512-5. 1.75 in-lb. [0.20 Nm] minimum.
- Required Sealing Plate Mounting Torque: 2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:
- Contact Current Rating: 5 amperes nominal
- Initial Contact Resistance: 0.010 ohms maximum.
- Insulator Resistance: 5 G ohms.
- Clearance and Creepage Distance Minimum: 0.039 inch [1.0mm].
- Proof Voltage: 1000 V r.m.s.
- Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:
- Temperature Range: -40°C to +125°C
CONTACT VARIANTS *
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

* If a variant is not listed above, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 26.

SOLDER CUP TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 2

INSIDE WALL ENCLOSURE MOUNT

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 3, 0.150 [3.81] CONTACT EXTENSION

OUTSIDE WALL ENCLOSURE MOUNT
Not available in Unibody design.
See Unique Feature section, page 46.
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 4, 0.219 [5.56] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT

Fixed female jackscrews

Enclosure shown for reference only

O-ring seal

0.080 [2.03] max. panel thickness

0.150 [3.81]

Typical part number: WDD26P4C7AT7U

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

WDD15 MALE

WDD26 MALE

WDD26*4**** 0.219 [5.56] CONTACT EXTENSION

<table>
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<th>C</th>
<th>D</th>
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</thead>
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<tr>
<td>WDD15<em>4</em>***</td>
<td>1.204 [30.56]</td>
<td>0.984 [24.99]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
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<tr>
<td>WDD26<em>4</em>***</td>
<td>1.532 [38.91]</td>
<td>1.312 [33.32]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
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<tr>
<td>WDD44F4****</td>
<td>2.072 [52.63]</td>
<td>1.852 [47.04]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
</tr>
</tbody>
</table>

Push-on fastener, beryllium copper

Typical part number: WDD26P4C7AT7U

SUGGESTED PRINTED BOARD HOLE SIZES:
Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners
**ORDERING INFORMATION - CODE NUMBERING SYSTEM**

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† **Unibody is the preferred design.** If a variant is not listed in Step 2, consult Technical Sales, as Positronic is ready to support requirements for other D-subminiature variants and is tooling additional variants. For information on existing design variants, see page 26.

<table>
<thead>
<tr>
<th>STEP</th>
<th>1</th>
<th>2</th>
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<tr>
<td>EXAMPLE</td>
<td>WDD</td>
<td>26</td>
<td>F</td>
<td>2</td>
<td>C5</td>
<td>A</td>
<td>T7</td>
<td>SU</td>
<td>/AA</td>
<td></td>
</tr>
</tbody>
</table>

† **STEP 2 - CONNECTOR VARIANTS**

15 - Male and Female
26 - Male and Female
† 44 - Female only

† **STEP 3 - CONNECTOR GENDER**

P - Male with interfacial seal
F - Female

∗ **STEP 4 - CONTACT TERMINATION TYPE**

2 - Solder cup.
3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
4 - Solder, right angle (90°) printed board mount, contact extension 0.219 [5.56].

**STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES**

C5 - Inside wall mounting for Code 2 and 3 (step 4) only.
C7 - Inside wall mounting for Code 4 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener.
C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener.

**NOTE:** For C9 outside wall mounting option, refer to Unique Features section, page 46.

**NOTE:**

* For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.
* See pre-wired section, page 33, for free/cable connectors.

**STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE**

A - Inside wall enclosure mounted connector.

**STEP 7 - FEMALE FIXED JACKSCREWS**

T7 - Always used when ordering C5, C7 and C8 (step 5).

**STEP 8 - SHELLS AND ACCESSORY OPTIONS**

U - Corrosion Protected Unibody Design
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.

SU - Corrosion Resistant Unibody Design
Stainless steel shells and jackscrews. Contacts 0.000030 inch [0.76 µ] gold plated over nickel.

**STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS**

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

**NOTE:** If compliance to environmental legislation is not required, this step will not be used. Example: WDD26F2C5AT7SU

**STEP 10 - SPECIAL OPTIONS**

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

Do you need 2-D drawings or 3-D models?

See page 10 for more information.

---

**NEW!**

WDD UNIBODY SERIES
IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS

WDD UNIBODY SERIES
IMPROVED UNIBODY DESIGN
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS
ENVIRONMENTAL CHARACTERISTICS:

WIN-D series connectors mounted on IEC 60529 or NEMA 250-1991 enclosures for electrical equipment.

WIN-D connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosure on which they are mounted. WIN-D connector enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other IEC and NEMA enclosures having less stringent environmental requirements.

WIN-D series cable connector with cable support WIN-D cable connectors meet all the requirement of IEC 60807-2 Performance Level 2, plus the ingress protection requirement of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS

Applicable IEC Moisture Tests
IP65 IEC 60529 Test 14.2.5 Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. Requirements: No water to have penetrated enclosure through connector.

IP67 IEC 60529 Test 14.2.7 Temporary immersion, 0.5 meters for 30 minutes. Requirements: No water to have penetrated enclosure through connector.

continued on next page. . . .
Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof

Requirements:

System 1 – Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.

System 2 – Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

System 3 – Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector Insert: Nylon resin, UL 94V-0 black color.
Contacts: Precision machined copper alloy.
Contact Plating: Gold flash over nickel plate.
Corrosion Protection: Steel, zinc plated with chrome seal.
Corrosion Resistant: Stainless steel passivated.

Push-on Fasteners: Phosphor bronze with tin plate.
Angle Brackets: Brass, zinc plate with chrome seal.
Hoods: Composite.
Interfacial Seal: Thermoplastic Elastomer (TPE), Santoprene® or equivalent.

Panel Mount Sealing Plate Assembly: Glass filled thermoplastic with elastomer O-ring.
Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

MECHANICAL CHARACTERISTICS:

Size 20 Fixed Contacts: Male contact – 0.040 inch [1.02 mm] mating diameter. Female contact - rugged open entry design.

Contact Retention in Connector insert: 6 lbs. [27N]
Resistance to Solder Iron Heat: 500°F (260°C) for 10 seconds duration per IEC 60512-6.

Contact Terminations: Solder cup contacts – 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm²] wire maximum.
Straight printed board mount – 0.028 inch [0.71 mm] termination diameter.
Right angle (90°) printed board mount – 0.028 inch [0.71 mm] termination diameter for all printed board contact footprints.
Trapezoidally shaped shells.

Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.

Coding (keying): Trapezoidally shaped shells.

Electrical Operations: Minimum thickness 0.040 inch [1.0 mm]. Maximum thickness 0.080 inch [2.0 mm].

Locking Systems: Jackscrews.
Mechanical Operations: 250 operations minimum per IEC 60512-5 IP67 immersion rated.
500 operations minimum per IEC 60512-5 IP65 spray nozzle rated.
1.75 in-lb. [0.20 Nm] minimum.
2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 7.5 amperes nominal.
Initial Contact Resistance: 0.008 ohms maximum.
Insulator Resistance: 5 G ohms.
Clearance and Creepage Distance Minimum: 0.039 inch [1.0mm].
Proof Voltage: 1000 V r.m.s.
Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -25°C to +85°C
CONTACT VARIANTS *
FACE VIEW OF MALE

*Solder Cup Termination
With Enclosure Wall Mount Sealing Plate
CODE 2

* Contact variants for size 9, 15, 37, 25 (female) and 50 (female) are available in the IMPROVED Unibody Design. See page 11 for details. For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 2

Typical part number: WD9P2C5AT70

INSIDE WALL ENCLOSURE MOUNT

SWAGED SPACER WITH PUSH-ON FASTENER, PHOSPHOR BRONZE

0.150 [3.81]
0.177 [4.50]
0.080 [2.03] max. panel thickness

Fixed female jackscrews

Enclosure shown for reference only

OUTSIDE WALL ENCLOSURE MOUNT

For more information, see Unique Features section, page 46.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE
CODE 3, 0.150 [3.81] CONTACT EXTENSION

Typical part number: WD15P3C8AT70

INSIDE WALL ENCLOSURE MOUNT

Swaged spacer with push-on fastener, phosphor bronze

0.150 [3.81]
0.177 [4.50]

0.080 [2.03] max. panel thickness

Fixed female jackscrews

Enclosure shown for reference only

OUTSIDE WALL ENCLOSURE MOUNT

For more information, see Unique Features section, page 46.
RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 5, 0.188 [4.78] CONTACT EXTENSION

INSIDE WALL ENCLOSURE MOUNT

Fixed female jackscrews

0.080 [2.03] max. panel thickness

0.150 [3.81]

0.177 [4.50]

Enclosure shown for reference only

O-ring seal

0.080 [2.03] max. panel thickness

0.150 [3.81]

Typical part number:
WD25P5C7AT70

Typical part number:
WD50P5C7AT70

WD**5**** 0.188 [4.78] CONTACT EXTENSION

<table>
<thead>
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<td>WD25P5****</td>
<td>2.072</td>
<td>1.852</td>
<td>0.244</td>
<td>0.188</td>
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<tr>
<td>WD50P5****</td>
<td>2.626</td>
<td>2.406</td>
<td>0.300</td>
<td>0.188</td>
</tr>
</tbody>
</table>

Enclosure shown for reference only

Cul-de-sac style threaded rivet

0.160 [4.06] Nominal

Numbering shown is rear view of male and face view of female connector

Push-on fastener, beryllium copper

Typical part number:
WD25P5C7AT70

Typical part number:
WD50P5C7AT70

INSIDE WALL ENCLOSURE MOUNT

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF THE ARROW.

SUGGESTED PRINTED BOARD HOLE SIZES:
Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners.
Suggest 0.045 [1.14] hole for contact termination positions.

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
## ORDERING INFORMATION - CODE NUMBERING SYSTEM

*Specify Complete Connector By Selecting An Option From Step 1 Through 8*

<table>
<thead>
<tr>
<th>STEP</th>
<th>EXAMPLE</th>
<th>CODE NUMBERING SYSTEM</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>WD 25 P 2 C5 A T7 S /AA</td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>C7</td>
<td>Inside wall mounting for Code 5 (step 4), right angle (90°) printed board mount, contact extension 0.188 [4.78].</td>
</tr>
<tr>
<td>3</td>
<td>C8</td>
<td>Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener. Available for sizes: 25 male, and 50 male.</td>
</tr>
</tbody>
</table>

† Contact variants for size 9, 15, 37, 25 (female) and 50 (female) have been transitioned to the preferred **Unibody** design. For WD Unibody Ordering Information, see page 13.

### STEP 1 - BASIC SERIES

WD Series

### STEP 2 - CONNECTOR VARIANTS

† 25 - Male only.
† 50 - Male only.

### STEP 3 - CONNECTOR GENDER

P - Male with interfacial seal
F - Female

### STEP 4 - CONTACT TERMINATION TYPE

2 - Solder cup.
3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
5 - Solder, right angle (90°) printed board mount, contact extension 0.188 [4.78].

### STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES

C5 - Inside wall mounting for Code 2 and 3 (step 4) only. 
Available for sizes: 25 male, and 50 male.

C7 - Inside wall mounting for Code 5 (step 4), right angle (90°) printed board mount only. Consists of an assembly of angle bracket, alignment bar and push-on fastener.
Available for sizes: 25 male, and 50 male.

C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener. Available for sizes: 25 male, and 50 male.

**NOTE:** For C9 outside wall mounting option, refer to Unique Features section, page 46.

### STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE

A - Inside wall enclosure mounted connector.

### STEP 7 - FEMALE FIXED JACKSCREWS

T7 - Always used when ordering C5, C7 and C8 (step 5).

### STEP 8 - SHELLS AND ACCESSORY OPTIONS

O - Corrosion Protected
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.

S - Corrosion Resistant
Stainless steel shells and jackscrews Contacts 0.000030 inch [0.76µ] gold plated over nickel.

### STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS

/AA - Compliant per EU Directive 2002/95/EC (RoHS)

**NOTE:** If compliance to environmental legislation is not required, this step will not be used. Example: WD25P2C5AT7S

### STEP 10 - SPECIAL OPTIONS

CONTACT TECHNICAL SALES FOR SPECIAL OPTIONS

Do you need 2-D drawings or 3-D models?

See page 10 for more information.

---

**Do you need 2-D drawings or 3-D models?**

See page 10 for more information
ENVIRONMENTAL CHARACTERISTICS:
WIN-DD series connectors mounted on IEC 60529 or NEMA 250 enclosures for electrical equipment.

WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosures on which they are mounted. WIN-DD connector-enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

WIN-DD series cable connectors with cable support: WIN-DD cable connectors meet the requirements of IEC 60807-2 Performance Level 2, where applicable, plus the ingress protection requirements of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS
Applicable IEC Moisture Tests

IP65 IEC 60529 Test 14.2.5: Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector. Requirements: No water to have penetrated enclosure through connector.

IP67 IEC 60529 Test 14.2.7: Temporary immersion, 0.5 meters for 30 minutes. Requirements: No water to have penetrated enclosure through connector.

continued on next page...
Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

IEC 60512-2, Test 3a: Insulation Resistance
IEC 60512-2, Test 4a: Voltage proof

Requirements:

System 1 – Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.

System 2 – Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

System 3 – Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.

• It is recommended that connectors be tested in the specific application.
• Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

Connector insert: Glass filled polyester per ASTM D5927 , UL 94V-0, black color.
Contacts: Precision machined copper alloy.
Contact Plating: Gold flash over nickel plate.
Corrosion Protection: Gold plate 0.00030 inch [0.76 µ] over nickel plate.
Corrosion Resistant: Steel, zinc plated with chromate seal.

Shells, Jackscrew Systems and Cul-de-sac Mounting Accessories:

Corrosion Protection: Stainless steel passivated.
Corrosion Resistant: Steel, zinc plated with chromate seal.

Hoods (Cable supports):

Corrosion Protection: Thermostatic Elastomer (TPE), Santoprene® or equivalent.

Interfacial Seal:

Panel Mount Sealing Plate Assembly:

Glass filled thermoplastic with elastomer O-ring.

Protective Cover Over Connector Shell:

Conductive polyethylene or conductive polyester.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating: 5 amperes nominal.
Initial Contact Resistance: 0.010 ohms maximum.
Insulator Resistance: 5 G ohms.
Clearance and Creepage Distances (minimum): 0.042 inch [1.06 mm].
Proof Voltage: 1000 V r.m.s.
Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -25°C to +85°C
CONTACT VARIANTS*

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

WDD 44
Currently available with male contacts. For female contact variants, see page 16.

WDD 62
Currently available with male and female contacts.

WDD 78
Currently available with male and female contacts.

* Contact variants for size 15, 26 and 44 (female) are available in the IMPROVED Unibody design. See page 16 for details. For sealing plate dimensions see page 7.

SOLDER CUP TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE

CODE 2

OUTSIDE WALL ENCLOSURE MOUNT

For more information, see Unique Features section, page 46.

STRAIGHT SOLDER PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE WALL MOUNT SEALING PLATE

CODE 3, 0.150 [3.81] CONTACT EXTENSION

OUTSIDE WALL ENCLOSURE MOUNT

For more information, see Unique Features section, page 46.
WDD SERIES
PROFESSIONAL QUALITY
HIGH DENSITY FIXED CONTACTS

RIGHT ANGLE (90°) PRINTED BOARD MOUNT TERMINATION
WITH ENCLOSURE MOUNT SEALING PLATE
CODE 4, 0.219 [5.56] CONTACT EXTENSION

WDD**4**** 0.219 [5.56] CONTACT EXTENSION

<table>
<thead>
<tr>
<th>PART NUMBER</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>WDD44M4****</td>
<td>2.072 [52.63]</td>
<td>1.852 [47.04]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
</tr>
<tr>
<td>WDD62<em>4</em>***</td>
<td>2.720 [68.66]</td>
<td>2.500 [63.50]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
</tr>
<tr>
<td>WDD78<em>4</em>***</td>
<td>2.626 [66.70]</td>
<td>2.406 [61.11]</td>
<td>0.319 [8.10]</td>
<td>0.219 [5.56]</td>
</tr>
</tbody>
</table>

Typical part number:
WDD62P4C7AT70

Typical part number:
WDD78P4C7AT70

INSIDE WALL ENCLOSURE MOUNT

RIGHT ANGLE (90°) AND STRAIGHT PRINTED BOARD CONTACT HOLE PATTERN
MOUNT CONNECTOR WITH MATING FACE POSITIONED TO FOLLOW DIRECTION OF ARROWS.

WDD44 MALE

WDD62 MALE

WDD78 MALE

WDD44FEMALE

WDD62FEMALE

WDD78FEMALE

SUGGESTED PRINTED BOARD HOLE SIZES:
Suggest 0.123 ±0.003 [3.12] Ø holes for mounting connector with push-on fasteners

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
ORDERING INFORMATION - CODE NUMBERING SYSTEM

Specify Complete Connector By Selecting An Option From Step 1 Through 8

† Contact variants for size 15, 26 and 44 (female) have been transitioned to the preferred Unibody design. For WDD Unibody Ordering Information, see page 18

STEP 1 - BASIC SERIES
WDD series

† STEP 2 - CONNECTOR VARIANTS
† 44 - Male only.
  62 - Male and Female
  78 - Male and Female

STEP 3 - CONNECTOR GENDER
P - Male with interfacial seal
F - Female

STEP 4 - CONTACT TERMINATION TYPE
  2 - Solder cup
  3 - Solder, straight printed board mount with 0.150 [3.81] tail length.
  4 - Solder, right angle (90°) printed board mount, contact extension 0.219 [5.56].

STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES
C5 - Inside wall mounting for Code 2 and 3 (step 4) only. Available for sizes: 62 and 78.
C8 - Inside wall mounting for Code 3 (step 4) only. Includes push-on fastener. Available for sizes: 62 and 78.

NOTE: For C9 outside wall mounting option, refer to Unique Features section, page 46.

STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE
A - Inside wall enclosure mounted connector.

STEP 7 - FEMALE FIXED JACKSCREWS
T7 - Always used when ordering C5, C7 and C8 (step 5).

STEP 8 - SHELLS AND ACCESSORY OPTIONS
O - Corrosion Protected
  Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.
S - Corrosion Resistant
  Stainless steel shells and jackscrews Contacts 0.000030 inch [0.76 µ] gold plated over nickel.

STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS
/AA - Compliant per EU Directive 2002/95/EC (RoHS)

NOTE: If compliance to environmental legislation is not required, this step will not be used. Example: WDD62F2C5AT7S

STEP 10 - SPECIAL OPTIONS
CONTACT TECHNICAL SALES
FOR SPECIAL OPTIONS

Do you need 2-D drawings or 3-D models?
See page 10 for more information
ENVIRONMENTAL CHARACTERISTICS:
WIN-D and WIN-DD series connectors mounted on IEC 60529 or NEMA 250 enclosures for electrical equipment.

WIN-D and WIN-DD connector panel mount sealing plates, when mounted on the walls of enclosures, maintain the dust and water ingress protection rating of IEC 60529 or NEMA 250 enclosures on which they are mounted. WIN-DD connector-enclosure assemblies provide dust and water ingress protection to IP67 which allows temporary immersion in water to a depth of 0.5 meters for 30 minutes without ingress of water or dust to the enclosure. Refer to Appendix A for details of IP67 ratings and NEMA enclosure types 6 and 4X, as well as other enclosures having less stringent environmental requirements.

WIN-D and WIN-DD series cable connectors with cable support WIN-D and WIN-DD cable connectors meet the requirements of IEC 60807-2 Performance Level 2, where applicable, plus the ingress protection requirements of IP67 thereby maintaining the electrical integrity and the ingress protection level of the connection system.

ENVIRONMENTAL TEST SPECIFICATIONS
Applicable IEC Moisture Tests

**IP65 IEC 60529 Test 14.2.5:** Spray nozzle 6.3 mm diameter, delivery rate 12.5 liters per minute, 1 minute duration of connector exposure to spray. When conducting this test on System 1 – Portable Enclosure Connectors, the protective cover must be securely fastened over the face of the connector.

Requirements: No water to have penetrated enclosure through connector.

**IP67 IEC 60529 Test 14.2.7:** Temporary immersion, 0.5 meters for 30 minutes. Requirements: No water to have penetrated enclosure through connector.

continued on next page...
TECHNICAL CHARACTERISTICS, continued

Applicable IEC Connector Tests After Moisture Exposure Tests Have Been Performed

<table>
<thead>
<tr>
<th>Test</th>
<th>Requirement</th>
</tr>
</thead>
<tbody>
<tr>
<td>IEC 60512-2, Test 3a</td>
<td>Insulation Resistance</td>
</tr>
<tr>
<td>IEC 60512-2, Test 4a</td>
<td>Voltage proof</td>
</tr>
</tbody>
</table>

Requirements:

<table>
<thead>
<tr>
<th>System</th>
<th>Description</th>
<th>Requirements</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Portable enclosure</td>
<td>System 1 – Portable enclosure. 1 G ohm minimum insulation resistance after connector face and contacts are dried. Voltage proof 1,000 V rms.</td>
</tr>
<tr>
<td>2</td>
<td>Enclosure mounted connector to cable connector.</td>
<td>System 2 – Enclosure mounted connector to cable connector. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.</td>
</tr>
<tr>
<td>3</td>
<td>Cable to cable connection systems.</td>
<td>System 3 – Cable to cable connection systems. 1 G ohm minimum insulation resistance. 1,000 V rms. Voltage proof.</td>
</tr>
</tbody>
</table>

- It is recommended that connectors be tested in the specific application.
- Service life of connectors cannot be predicted for all applications.

MATERIALS AND FINISHES:

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector Insert:</td>
<td>WD: Nylon resin, UL 94V-0, black color.</td>
</tr>
<tr>
<td></td>
<td>WDD: Glass filled polyester per ASTM D5927 UL 94V-0, black color.</td>
</tr>
<tr>
<td>Contacts:</td>
<td>Precision machined copper alloy.</td>
</tr>
<tr>
<td>Contact Plating:</td>
<td>Gold flash over nickel plate.</td>
</tr>
<tr>
<td>Corrosion Protection:</td>
<td>Gold plate 0.000030 inch [0.76 µ] over nickel plate.</td>
</tr>
<tr>
<td>Shells, Jackscrew Systems and Cul-de-sac Mounting Accessories:</td>
<td>Steel, zinc plated with chrome seal.</td>
</tr>
<tr>
<td></td>
<td>Stainless steel passivated.</td>
</tr>
<tr>
<td>Push-on Fasteners:</td>
<td>Phosphor bronze with tin plate.</td>
</tr>
<tr>
<td>Angle Brackets:</td>
<td>Brass, zinc plate with chrome seal.</td>
</tr>
<tr>
<td>Hoods (Cable supports):</td>
<td>Composite.</td>
</tr>
<tr>
<td>Interfacial Seal:</td>
<td>Thermoplastic Elastomer (TPE), Santoprene® or equivalent.</td>
</tr>
<tr>
<td>Panel Mount Sealing Plate Assembly:</td>
<td>Glass filled thermoplastic with elastomer O-ring.</td>
</tr>
<tr>
<td>Protective Cover Over Connector Shell:</td>
<td>Conductive polyethylene or conductive polyester.</td>
</tr>
</tbody>
</table>

MECHANICAL CHARACTERISTICS:

Fixed Contacts:

- **WD Size 20:**
  - Male contact – 0.040 inch [1.02 mm] mating diameter. Female contacts – rugged open entry design.
- **WDD Size 22:**
  - Male contact – 0.030 inch [0.75 mm] mating diameter. Female contacts – rugged “Robi-D” open entry design.

Contact Retention in Connector Insert:

- Resistance to Solder Iron Heat: 6 lbs. [27N]
- Contact Terminations: Solder cup contacts - soldered to wire with 20 in [50 cm] flying leads.
- Coding (keying): Trapezoidal shaped shells.
- Enclosure Mounting Accessories: Cul-de-sac blind hole fasteners, angle brackets and push-on fasteners.
- Inside Wall: Minimum thickness 0.040 inch [1.0 mm]. Maximum thickness 0.080 inch [2.0 mm].
- Locking Systems: Jackscrews.
- Mechanical Operations: 250 operations minimum per IEC 60512-5 IP67 immersion rated. 500 operations minimum per IEC 60512-5 IP65 spray nozzle rated.
- Required Sealing: 1.75 in-lb. [0.20 Nm] minimum. Plate Mounting Torque: 2.25 in-lb. [0.25 Nm] maximum.

ELECTRICAL CHARACTERISTICS:

Contact Current Rating:

- WD: 7.5 amperes nominal.
- WDD: 5 amperes nominal.

Initial Contact

- WD: 0.008 ohms maximum.
- WDD: 0.010 ohms maximum.

Insulator Resistance:

- WD: 5 G ohms.
- WDD: 0.039 inch [1 mm].

Clearance and Creepage Distance (minimum):

- WD: 0.042 inch [1.06 mm].
- Working Voltage: 1000 V r.m.s.
- Plate Mounting Torque: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -25°C to +85°C

Visit our web site for the latest catalog updates and supplements at www.connectpositronic.com/connector-details/d-subminiature/environmentally-sealed/catalog

Do you need 2-D drawings or 3-D models?

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.
STANDARD DENSITY CONTACT VARIANTS
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

WD 9
WD 15
WD 25
WD 37
WD 50

SOLDER CUP TERMINATION
SOLDERED TO WIRE AND ENCAPSULATED IN EPOXY RESIN
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WD SERIES
CODE 22

20 AWG [0.5 mm] flying leads
20 inch [51 cm]

Typical part number:
WD15F220Z0S

Note: Z hood not shown for clarity.

SOLDER CUP TERMINATION
SOLDERED TO WIRE FOR USE WITH ENCLOSURE MOUNTED CONNECTORS
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WD SERIES
CODE 23

20 AWG [0.5 mm] flying leads
0.150 [3.81]
0.177 [4.50]
0.080 [2.03] max. panel thickness
Fixed female jackscrews
20 inch [51 cm]

Typical part number:
WD15F23C5AT70

Enclosure shown for reference only

For more information, see Unique Features section, page 46.
HIGH DENSITY CONTACT VARIANTS
FACE VIEW OF MALE OR REAR VIEW OF FEMALE

WDD 15
WDD 26
WDD 44
WDD 62
WDD 78

SOLDER CUP TERMINATION
SOLDERED TO WIRE AND ENCAPSULATED IN EPOXY RESIN
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WDD SERIES
CODE 22

Typical part number:
WDD15F220Z0S

SOLDER CUP TERMINATION
SOLDERED TO WIRE FOR USE WITH ENCLOSURE MOUNTED CONNECTORS
20 INCH [50 CM] FLYING LEADS
FOR USE WITH WDD SERIES
CODE 23

Typical part number:
WDD15F23C5AT70

Note: Z hood not shown for clarity.

For more information, see Unique Features section, page 46.
**ORDERING INFORMATION - CODE NUMBERING SYSTEM**

_Specify Complete Connector By Selecting An Option From Step 1 Through 8_

<table>
<thead>
<tr>
<th>STEP</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>6</th>
<th>7</th>
<th>8</th>
<th>9</th>
<th>10</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE</td>
<td>WDD</td>
<td>9</td>
<td>F</td>
<td>22</td>
<td>0</td>
<td>Z</td>
<td>0</td>
<td>S</td>
<td>/AA</td>
<td></td>
</tr>
</tbody>
</table>

**STEP 1 - BASIC SERIES**
WD Series - Size 20 contacts
WDD Series - Size 22 contacts

**STEP 2 - CONNECTOR VARIANTS**
WD Series Connector Variants
9, 15, 25, 37, and 50

WDD Series Connector Variants
15, 26, 44, 62, and 78

**STEP 3 - CONNECTOR GENDER**
P - Male with interfacial seal
F - Female

**STEP 4 - CONTACT TERMINATION TYPE**
22 - Solder cup, soldered to wire and encapsulated in epoxy resin with 20 inch [51 cm] flying leads. Other lengths available by special order (See page 34).
23 - Solder cup, soldered to wire with 20 inch [51 cm] flying leads. Not encapsulated. For use with enclosure mounted connectors.

**STEP 5 - CUL-DE-SAC STYLE MOUNTING ACCESSORIES**
0 - No mounting plate or accessories. Available only with Code 22 (step 4).
C5 - Inside wall mounting.

**NOTE:** For C9 outside wall mounting option, refer to Unique Features section, page 46.

**STEP 6 - ENCLOSURE WALL MOUNT SEALING PLATE OR HOODS**
0 - None Use only with Code 0 (step 5).
A - Inside wall enclosure mounted connector. Available with C5 (step 5) only.
Z - Composite hood with rotating male jackscrews. Available with Code 22 (step 4) only.
Z4 - Composite hood with fixed female jackscrews. Available with Code 22 (step 4) only.

**STEP 7 - FEMALE FIXED JACKSCREWS**
0 - None. Use only with Code 0 (step 5).
T7 - Always used when ordering C5 (step 5).

**STEP 8 - SHELLS AND ACCESSORY OPTIONS**
0 - Corrosion Protected
Steel shells and jackscrews zinc plated with chromate seal. Contacts gold flash over nickel plate.

S - Corrosion Resistant
Stainless steel shells and jackscrews. Contacts 0.000030 inch [0.76µ] gold plated over nickel.

**STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS**
/AA - Compliant per EU Directive 2002/95/EC (RoHS)

**STEP 10 - SPECIAL OPTIONS**
See page 34 for additional options.

**Do you need 2-D drawings or 3-D models?**
See page 10 for more information.
**COLOR**

Omit if standard (black) is required for all wires.

C - Colored wire option, consists of up to 10 different wire insulation colors pre-wired in the following configuration:

<table>
<thead>
<tr>
<th>Contact Position Number *</th>
<th>Insulation Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
</tr>
<tr>
<td>7</td>
<td>Violet</td>
</tr>
<tr>
<td>8</td>
<td>Gray</td>
</tr>
<tr>
<td>9</td>
<td>White</td>
</tr>
<tr>
<td>0</td>
<td>Black</td>
</tr>
</tbody>
</table>

* The contact position number indicated represents the last digit of the contact position number. (I.E.: position 37 will be Violet)

---

**PLATING**

Omit if standard plating is required.

-14 - Contacts to be plated 0.000030 [0.76µ] gold over nickel.
-15 - Contacts to be plated 0.000050 [1.27µ] gold over nickel.
-50 - Contacts to be plated 0.000050 [1.27µ] gold over copper.

Contact technical sales for additional plating options.

**GAUGE**

Omit if standard wire is required - Standard for WD series is 20 AWG. Standard for WDD series is 22 AWG.

- 22G - 22 AWG wire
- 24G - 24 AWG wire

**TABLE 1. CABLE LENGTH TOLERANCE**

<table>
<thead>
<tr>
<th>Cable Length [meters]</th>
<th>≤1 m</th>
<th>&gt;1 m, &lt;8 m</th>
<th>&gt;8 m, &lt;16 m</th>
<th>&gt;16 m</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tolerance [millimeters]</td>
<td>±25</td>
<td>±50</td>
<td>±75</td>
<td>±100</td>
</tr>
</tbody>
</table>

**STANDARD WIRE CHARACTERISTICS**

Materials:

- Wire: Stranded tinned copper 7/30-22 AWG and 7/28-20 AWG
- Insulation: PVC
- Specification: per Mil-W-16878/1-PVC
- Temperature Rating: -55º TO +105ºC
- Voltage Rating: 600 Volts

---

**EXAMPLE**

<table>
<thead>
<tr>
<th>STEP 10</th>
<th>PLATING</th>
<th>COLOR</th>
<th>GAUGE</th>
<th>LENGTH</th>
<th>TOLERANCE</th>
</tr>
</thead>
<tbody>
<tr>
<td>EXAMPLE</td>
<td>14</td>
<td>C</td>
<td>24G</td>
<td>3.05</td>
<td>T20</td>
</tr>
</tbody>
</table>

**STEP 10**

**PLATING**

Omit if standard plating is required.

-14 - Contacts to be plated 0.000030 [0.76µ] gold over nickel.
-15 - Contacts to be plated 0.000050 [1.27µ] gold over nickel.
-50 - Contacts to be plated 0.000050 [1.27µ] gold over copper.

Contact technical sales for additional plating options.

**COLOR**

Omit if standard (black) is required for all wires.

C - Colored wire option, consists of up to 10 different wire insulation colors pre-wired in the following configuration:

<table>
<thead>
<tr>
<th>Contact Position Number *</th>
<th>Insulation Color</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Brown</td>
</tr>
<tr>
<td>2</td>
<td>Red</td>
</tr>
<tr>
<td>3</td>
<td>Orange</td>
</tr>
<tr>
<td>4</td>
<td>Yellow</td>
</tr>
<tr>
<td>5</td>
<td>Green</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
</tr>
<tr>
<td>7</td>
<td>Violet</td>
</tr>
<tr>
<td>8</td>
<td>Gray</td>
</tr>
<tr>
<td>9</td>
<td>White</td>
</tr>
<tr>
<td>0</td>
<td>Black</td>
</tr>
</tbody>
</table>

* The contact position number indicated represents the last digit of the contact position number. (I.E.: position 37 will be Violet)
ENVIRONMENTAL CHARACTERISTICS:
EVD connectors, having crimp contacts, meet all of the applicable requirements of MIL-DTL-24308 in addition to the requirements shown below:

**Test** | **Requirements**
--- | ---
**IP67** | Temporary immersion, 0.5 meters for 30 minutes. Mated condition. No water to have penetrated enclosure through connector.

Humidity per EIA 364-31 method IV, Method 1002.2, Type II
1) No deterioration of performance.
2) Insulation resistance greater than 100 mega ohms.
3) Withstand a potential of 1000 VAC (rms) without evidence of flashover or breakdown.

Fluid Immersion per ANSI/EIA-364-10
Test Conditions A and D
1) No detrimental damage.
2) Meet mating and unmating requirements of MIL-DTL-24308.

Immersion, 2 hours at a depth of 36 inch [914.4 mm] in mated condition per MIL-STD 810 Method 512.3. Procedure 1.
While Immersed:
1) Insulation resistance greater than 100 mega ohms.
2) Withstand a potential of 1000 VAC (rms) without evidence of flashover or breakdown.

MATERIALS AND FINISHES:
Connectors Conforms to:
- IP 67 per IEC 60529
- Performance conforms to applicable requirements of MIL-DTL-24308 and SAE AS39029

**Connector Insert:**
- Glass-filled DAP per ASTM-D-5948 type SDG-F, UL 94V-0, green color.
- Precision machined cooper alloy.

**Military performance** - 0.000050 inch [1.27 µ] gold over nickel plate.
**Industrial performance** - 0.000030 inch [0.76 µ] gold over nickel.

**Contacts:**
- Contact Plating:

**Shells:**
- Steel with zinc plate with chromate seal and stainless steel, passivated.

**Popular, economical option for applications requiring sealed connectors.**

**Precision sealing process, grommets, and interfacial seals ensure environmental performance. See page 38 for details.**

**Materials are resistant to a wide variety of harsh liquids.**

**Crimp removable, size 20 contacts**

**Five connector variants include 9, 15, 25, 37, and 50 contacts.**

**Corrosion protected and corrosion resistant options.**

**A wide variety of options and accessories.**
Mounting Spacers: Steel or brass, zinc plate with chromate seal.

Jackscrew Systems: Steel with zinc plate and chromate seal; and stainless steel, passivated.

Hoods: Composite.

Grommet and Interfacial Seal: Fluorosilicone Rubber per MIL-DTL-25988.

Bonding Material: Fluorosilicone based sealant/adhesive.

Protective Cover Over Connector Shell: Conductive polyethylene or conductive polyester.

Sealing Plug: Teflon.

MECHANICAL CHARACTERISTICS:

Size 20 Removable Contacts: Install contact to rear face of connector insert and release from rear face of connector insert. Male - 0.040 inch [1.02 mm] diameter. Female - PosiBand closed entry design

Contact Retention in Insulator: 9 lbs. [40 N].

Contact Terminations: Closed barrel crimp, wire sizes 20 AWG [0.5 mm²] through 24 AWG [0.25 mm²]; Solder contacts - 0.042 inch [1.06 mm] minimum hole diameter for 20 AWG [0.5 mm²] through 24 AWG [0.25 mm²] wire size.

Coding (keying): Trapezoidally shaped shells.

Locking Systems: Jackscrews.

Mechanical Operations: 500 operations minimum per IEC 60512-5.

ELECTRICAL CHARACTERISTICS:

Dry Conditions, Basic Connector Body:

Contact Current Rating, Tested per UL 1977:

- 18 amperes, 2 contacts energized.
- 14 amperes, 6 contacts energized.
- 11 amperes, 15 contacts energized.
- 10 amperes, 25 contacts energized.
- 9 amperes, 50 contacts energized.


Initial Contact Resistance: 0.004 ohms maximum.

Proof Voltage: 1,000 V r.m.s.

Insulation Resistance: 5 G ohms.

Clearance and Creepage Distance (minimum): 0.039 inch [1.0 mm].

Working Voltage: 300 V r.m.s.

CLIMATIC CHARACTERISTICS:

Temperature Range: -55°C to +125°C.

THERMOCOUPLE CONTACTS:

Size 20 crimp contacts are available, see page 40 for details.

CONTACT VARIANTS

FACE VIEW OF MALE OR REAR VIEW OF FEMALE

EVD 9

EVD 15

EVD 25

EVD 37

EVD 50

For information regarding REMOVABLE CONTACTS, see illustration/drawing and charts on pages 39 & 40.
EVD SERIES
MILITARY / INDUSTRIAL QUALITY
FOR MILITARY AND SEVERE INDUSTRIAL ENVIRONMENTAL APPLICATIONS
STANDARD DENSITY REMOVABLE CONTACTS

STANDARD SHELL ASSEMBLY

RECOMMENDED MATING DIMENSIONS

CONNECTOR VARIANT SIZES

<table>
<thead>
<tr>
<th>CONNECTOR</th>
<th>GENDER</th>
<th>A ±0.015 [0.38]</th>
<th>B ±0.005 [0.13]</th>
<th>B1 ±0.005 [0.13]</th>
<th>C ±0.005 [0.13]</th>
<th>D ±0.005 [0.13]</th>
<th>D1 ±0.005 [0.13]</th>
<th>E ±0.015 [0.38]</th>
<th>G ±0.010 [0.25]</th>
<th>H ±0.010 [0.25]</th>
<th>K ±0.005 [0.13]</th>
<th>M ±0.010 [0.25]</th>
</tr>
</thead>
<tbody>
<tr>
<td>EVD 25</td>
<td>MALE</td>
<td>2.088 [53.04]</td>
<td>1.534 [38.96]</td>
<td>1.852 [47.04]</td>
<td>0.329 [8.36]</td>
<td>0.494 [12.55]</td>
<td>1.625 [41.28]</td>
<td>0.422 [10.72]</td>
<td>0.230 [5.84]</td>
<td>0.426 [10.82]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVD 37</td>
<td>MALE</td>
<td>2.729 [69.32]</td>
<td>2.182 [55.42]</td>
<td>2.500 [63.50]</td>
<td>0.329 [8.36]</td>
<td>0.494 [12.55]</td>
<td>2.272 [57.71]</td>
<td>0.422 [10.72]</td>
<td>0.230 [5.84]</td>
<td>0.426 [10.82]</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>FEMALE</td>
<td>2.729 [69.32]</td>
<td>2.159 [54.50]</td>
<td>2.500 [63.50]</td>
<td>0.311 [7.90]</td>
<td>0.494 [12.55]</td>
<td>2.272 [57.71]</td>
<td>0.422 [10.72]</td>
<td>0.243 [6.17]</td>
<td>0.429 [10.90]</td>
<td></td>
<td></td>
</tr>
<tr>
<td>EVD 50</td>
<td>MALE</td>
<td>2.635 [66.95]</td>
<td>2.079 [52.81]</td>
<td>2.406 [61.11]</td>
<td>0.441 [11.20]</td>
<td>0.605 [15.37]</td>
<td>2.178 [55.32]</td>
<td>0.534 [13.56]</td>
<td>0.230 [5.84]</td>
<td>0.426 [10.82]</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

DIMENSIONS ARE IN INCHES (MILLIMETERS). ALL DIMENSIONS ARE SUBJECT TO CHANGE.
EVD SERIES DESIGN
ENVIRONMENTAL SEALING FEATURES

FEMALE CONNECTOR

MALE CONNECTOR

SEALING PLUG

ORDER SEPARATELY, PART NUMBER 4737-37-0-0

Rear grommet

Interfacial seal

Material: Fluorosilicone and silicone blend.
Contact technical sales for ordering information.
**NEW!**

**INDUSTRIAL / MILITARY LEVEL REMOVABLE CRIMP CONTACT**

**FOR USE WITH EVD SERIES CONNECTORS**

**SIZE 20**

**FEMALE CONTACT**

“CLOSED ENTRY” DESIGN

<table>
<thead>
<tr>
<th>FEMALE PART NUMBER</th>
<th>WIRE SIZE AWG/([\text{mm}^2])</th>
<th>ØA</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC6020D2-14</td>
<td>20 / 22 / 24 (0.5/0.3/0.25)</td>
<td>0.045 (1.14)</td>
</tr>
</tbody>
</table>

**MALE CONTACT**

<table>
<thead>
<tr>
<th>MALE PART NUMBER</th>
<th>WIRE SIZE AWG/([\text{mm}^2])</th>
<th>ØA</th>
</tr>
</thead>
<tbody>
<tr>
<td>MC6020D-14</td>
<td>20 / 22 / 24 (0.5/0.3/0.25)</td>
<td>0.045 (1.14)</td>
</tr>
</tbody>
</table>

*Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.*

**PROFESSIONAL LEVEL REMOVABLE CRIMP CONTACT**

**FOR USE WITH EVD SERIES CONNECTORS**

**SIZE 20**

**FEMALE CONTACT**

“ROBI-D” OPEN ENTRY DESIGN

<table>
<thead>
<tr>
<th>FEMALE PART NUMBER</th>
<th>WIRE SIZE AWG/([\text{mm}^2])</th>
</tr>
</thead>
<tbody>
<tr>
<td>FC6520D-14</td>
<td>20 / 22 / 24 (0.5/0.3/0.25)</td>
</tr>
</tbody>
</table>

*Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.*

For information regarding **CRIMP TOOL AND CRIMPING TOOL TECHNIQUES**, see page 47.
**Removable Thermocouple Crimp Contact**

For use with EVD Series Connectors

**Size 20**

**Female Contact**

“Closed Entry” Design

**Male Contact**

*Note: Connectors can be kitted with all applicable crimp contacts, contact Technical Sales for connector part number.*

---

<table>
<thead>
<tr>
<th>Type</th>
<th>Material</th>
<th>Female Part Number</th>
<th>Male Part Number</th>
<th>Color Code</th>
<th>Wire Size AWG [mm²]</th>
<th>ØA</th>
<th>ØB</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>Chromel (+)</td>
<td>FC6020D2CH††</td>
<td>MC6020DCH†</td>
<td>White</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>Alumel (-)</td>
<td>FC6020D2AL††</td>
<td>MC6020DAL†</td>
<td>Green</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
<tr>
<td>T</td>
<td>Copper (+)</td>
<td>FC6020D2CU††</td>
<td>MC6020DCU†</td>
<td>Red</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>Constantan (-)</td>
<td>FC6020D2CO††</td>
<td>MC6020DCO†</td>
<td>Yellow</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
<tr>
<td>E</td>
<td>Chromel (+)</td>
<td>FC6020D2CH††</td>
<td>MC6020DCH†</td>
<td>White</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
<tr>
<td></td>
<td>Constantan (-)</td>
<td>FC6020D2CO††</td>
<td>MC6020DCO†</td>
<td>Yellow</td>
<td>20 / 22 / 24</td>
<td>0.066</td>
<td>0.045</td>
</tr>
</tbody>
</table>

---

For more information on the availability of Type J thermocouple contacts, and information about thermocouple contacts with printed circuit board solder termination, please contact Technical Sales.

Chrome® and Alumel® are registered trademarks of Hoskins Manufacturing Company.

---

For information regarding CRIMP TOOL AND CRIMPING TOOL TECHNIQUES, see page 47.

---

Contact Reels for Automatic Pneumatic Crimp Tools

Contacts may be supplied in plastic carriers, packaged in reels holding 2,000 contacts for use with the automatic pneumatic crimp tools, catalog part numbers 9550-0 and 9550-1; packaged in reels holding 1,000 contacts for use with the automatic pneumatic crimp tools, catalog part number 9555-0-2. The same type carrier is used for both male and female contacts.

All male and female crimp contacts can be ordered in reels by adding letter “R” after the contact part number, such as MC6020DR for a male contact and FC6026D2R for a female contact.
### ORDERING INFORMATION - CODE NUMBERING SYSTEM

**Specify Complete Connector By Selecting An Option From Step 1 Through 8**

<table>
<thead>
<tr>
<th>STEP</th>
<th>EXAMPLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>EVD</td>
</tr>
<tr>
<td>2</td>
<td>25</td>
</tr>
<tr>
<td>3</td>
<td>P</td>
</tr>
<tr>
<td>4</td>
<td>1</td>
</tr>
<tr>
<td>5</td>
<td>0</td>
</tr>
<tr>
<td>6</td>
<td>Z</td>
</tr>
<tr>
<td>7</td>
<td>0</td>
</tr>
<tr>
<td>8</td>
<td>S</td>
</tr>
<tr>
<td>9</td>
<td>/AA</td>
</tr>
<tr>
<td>10</td>
<td></td>
</tr>
</tbody>
</table>

**STEP 1 - BASIC SERIES**
- EVD Series

**STEP 2 - EVD Connector Variants**
- 9, 15, 25, 37, 50

**STEP 3 - CONNECTOR GENDER**
- P - Male with interfacial seal
- S - Female - PosiBand closed entry contact design

**STEP 4 - Type of Contacts**
- 0 - Contacts ordered separately. See pages 39 & 40.
- 1 - Crimp, 20 AWG - 24 AWG [0.5 mm² - 0.25 mm²] kitted with connector.
- 2 - Solder, 20 AWG - 24 AWG [0.5 mm² - 0.25 mm²] kitted with connector.

**STEP 5 - MOUNTING STYLE**
- 0 - Mounting hole, 0.120 [3.05] diameter.
- F - Float mounts, universal.
- S2 - Swaged spacer, 4-40 threads, 0.125 [3.18] length.
- S5 - Swaged locknut, 4-40 threads.

**STEP 6 - HOODS**
- 0 - None.
- Z - Composite hood with rotating male jackscrews.
- Z4 - Composite hood with fixed female jackscrews.

**STEP 7 - LOCKING SYSTEMS**
- 0 - None. Use only with ‘Z’ or ‘Z4’ (step 6).
- T2 - Fixed female jackscrews.
- E - Rotating male jackscrews.

**STEP 8 - SHELL OPTIONS**
- *S - Stainless steel, passivated.
- 0 - Zinc plated with chromate seal.

**STEP 9 - ENVIRONMENTAL COMPLIANCE OPTIONS**
- /AA - Compliant per EU Directive 2002/95/EC (RoHS)

**NOTE:** If compliance to environmental legislation is not required, this step will not be used. Example: EVD25P10Z0S

**STEP 10 - SPECIAL OPTIONS**
- Consult Technical Sales

**For information regarding REMOVABLE CONTACTS, see illustration/drawing and charts on pages 39 & 40.**

---

**Do you need 2-D drawings or 3-D models?**

Once you have made a connector selection, contact Technical Sales if you would like a 2-D drawing or 3-D model. If we do not have your specific part number on file, we can create one for you. Or, please visit www.connectpositronic.com and use the search function.

---

**NOTES:**

*1 For additional information listed in Steps 5, 6, and 7, see the Accessories section, page 42.

*2 For stainless steel dimpled male versions, contact Technical Sales.
CUL-DE-SAC STYLE MOUNTING ACCESSORIES
FOR USE WITH WD AND WDD SERIES
CODE C5, C7 AND C8 (STEP 5)

INSIDE WALL

OUTSIDE WALL ENCLOSURE MOUNT
Not available in Unibody design.
See Unique Feature section, page 46.

ENCLOSURE WALL MOUNT SEALING PLATE
FOR USE WITH WD AND WDD SERIES
CODE A (STEP 6)

INSIDE WALL ENCLOSURE MOUNT

OUTSIDE WALL ENCLOSURE MOUNT
Not available in Unibody design.
See Unique Feature section, page 46.

Sealing Plate Material:
Glass filled thermoplastic

Note: Sealing plate is mounted to enclosure wall with jackscrews torqued to a value of 1.75 in-lb [0.20 Nm] minimum, 2.25 in-lb [0.25 Nm] maximum.

INTERFACIAL SEAL
FOR USE WITH WD, AND WDD SERIES*
FURNISHED ON ALL MALE CONNECTORS

*NOTE:
For information on the interfacial seal supplied with EVD Series, see page 38.
COMPOSITE HOODS
FOR USE WITH WD, WDD OR EVD SERIES
CODE Z OR Z4 (STEP 6)

CODE Z: Composite hood with rotating male jackscrews.

Fixed Female Jackscrews
4-40 UNC Threads, Steel, Zinc plated or Stainless Steel, passivated

Typical part number:
D25000Z400

CODE Z4: Composite hood with fixed female jackscrews.

Rotating Male Jackscrews
4-40 UNC Threads, Steel, Zinc plated or Stainless Steel, passivated

Typical part number:
D25000Z400

Cable Opening
(Side cable opening not available for size 50 hood)

Typical Inserts
Various inserts are provided to accommodate different cable sizes

MOLDED CABLE ASSEMBLY
EMI ENVIRONMENT INGRESS PROTECTION CODE IP67
AVAILABLE WITH WD, WDD AND EVD SERIES

CONTACT TECHNICAL SALES FOR MORE INFORMATION

Dimensions are in inches [millimeters]. All dimensions are subject to change.
ENCLOSURE WALL CUTOUT FOR CONNECTORS
WD SERIES AND WDD SERIES

G Radius

PROTECTIVE COVER
SUPPLIED AS STANDARD WITH ALL CONNECTORS
WD, WDD AND EVD SERIES

SHELL SIZE | WD | WDD | MOUNTING | A ±0.005 | B ±0.005 | C ±0.005 | D ±0.005 | E ±0.005 | F ±0.005 | G ±0.002
--- | --- | --- | --- | --- | --- | --- | --- | --- | --- | ---
1 | 9 | 15 | Inside Wall | 0.806 | 0.403 | 0.984 | 0.492 | 0.449 | 0.225 | 0.132 | 0.083 | 0.021
Outside Wall | 0.974 | 0.437 | 0.984 | 0.492 | 0.513 | 0.257 | 0.083 | 0.021
2 | 15 | 26 | Inside Wall | 1.134 | 0.567 | 1.312 | 0.656 | 0.449 | 0.225 | 0.132 | 0.083 | 0.021
Outside Wall | 1.202 | 0.601 | 1.312 | 0.656 | 0.513 | 0.257 | 0.083 | 0.021
3 | 25 | 44 | Inside Wall | 1.674 | 0.837 | 1.852 | 0.926 | 0.449 | 0.225 | 0.132 | 0.083 | 0.021
Outside Wall | 1.743 | 0.872 | 1.852 | 0.926 | 0.513 | 0.257 | 0.083 | 0.021
4 | 37 | 62 | Inside Wall | 2.326 | 1.163 | 2.500 | 1.250 | 0.449 | 0.225 | 0.132 | 0.083 | 0.021
Outside Wall | 2.391 | 1.196 | 2.500 | 1.250 | 0.513 | 0.257 | 0.083 | 0.021
5 | 50 | 78 | Inside Wall | 2.218 | 1.109 | 2.406 | 1.203 | 0.555 | 0.278 | 0.132 | 0.083 | 0.021
Outside Wall | 2.297 | 1.149 | 2.406 | 1.203 | 0.623 | 0.312 | 0.132 | 0.083 | 0.021

PROTECTIVE COVER
SUPPLIED AS STANDARD WITH ALL CONNECTORS
WD, WDD AND EVD SERIES

COVER WITHOUT EARS
(FOR CONNECTORS WITHOUT FIXED JACKSCREWS)

Material: Conductive polyethylene
Color: Black
Optional Material: Static dissipative ethylene vinyl acetate
Optional: Pink

COVER WITH EARS
(FOR CONNECTORS WITH FIXED JACKSCREWS)

Material: Conductive polyester
Color: Black

DIMENSIONS ARE IN INCHES [MILLIMETERS].
ALL DIMENSIONS ARE SUBJECT TO CHANGE.
Positronic is known around the world for offering our customers flexibility when choosing connectors.

In addition to allowing customers to create part numbers for particular applications, Positronic offers a wide variety of features and accessories within our products.

Positronic is also eager to modify existing products to meet unique customer requirements. If you do not find what you need with this catalog, please contact us for assistance.

OTHER SEALED D-SUBMINIATURE CONNECTOR OPTIONS

Contacts have special water-tight interference fit seal into insulator

MD STYLE CONNECTOR

ODD STYLE CONNECTOR

COMBO-D STYLE CONNECTOR

SEALING STANDARD OR HIGH DENSITY D-SUBMINIATURE

- Available in both standard density and high density connector variants.
- Standard MD or ODD series connectors can be sealed between the connector shell and the connector insert.
- Contact technical sales for more information.

SEALING COMBINATION D-SUBMINIATURE

- Could be supplied with mounting plate or without.
- Contact technical sales for more information or additional contact configurations.
NEW!

MACHINED ALUMINUM MOUNTING PLATE WITH CONDUCTIVE O-RING

- Enclosure shown for reference only
- Fixed female jackscrews
- 0.080 [2.03] max. panel thickness
- Rear shell O-ring
- Panel mount sealing plate
- Front shell
- Epoxy sealant
- O-ring seal
- 0.150 [3.81]
- 0.177 [4.50]
- Panel thickness

MATERIALS AND FINISHES:
- Panel mount sealing plate: Aluminum, yellow chromate coating.
- Conductive O-ring: Silver coated thermoplastic elastomer.

CONTACT TECHNICAL SALES FOR MORE INFORMATION

OUTSIDE WALL ENCLOSURE MOUNT
FOR APPLICATIONS REQUIRING SEALED D-SUBMINIATURE CONNECTOR TO BE MOUNTED ON THE OUTSIDE OF THE ENCLOSURE.

- Enclosure shown for reference only
- O-ring
- 4-40 UNC Threads
- Sealing plate material: Glass filled thermoplastic

Note: Sealing plate is mounted to enclosure wall with jackscrews torqued to a value of 1.75 in-lb [0.20 Nm] minimum, 2.25 in-lb [0.25 Nm] maximum.

CONTACT TECHNICAL SALES FOR PART NUMBER

LIGHTWEIGHT ALUMINUM HOOD

Positronic now offers a Lightweight Aluminum Hood for use with D-subminiature connectors!

These hoods are offered in the following material and finish combinations:
- Aluminum
- Aluminum with electroless nickel plate
- Aluminum with yellow anodize,
- Aluminum with yellow chromate conversion, zinc content is 1% maximum.

UNIQUE FEATURES

DIMENSIONS ARE IN INCHES [MILLIMETERS]. ALL DIMENSIONS ARE SUBJECT TO CHANGE.
EVD connectors are offered with removable crimp contacts.

Positronic recognizes the importance of supplying application tooling to support our customers’ use of our products.

Information on application tooling is available on our web site at http://www.connectpositronic.com/design-tools/tooling

There you will find downloadable PDF cross reference charts for removable and compliant press-in contacts. These charts will supply part numbers for insertion, removal and crimping tools, along with information regarding use of tools and techniques.
<table>
<thead>
<tr>
<th>CONTACT APPLICATION TOOLS CROSS REFERENCE LIST</th>
<th>USE INDICATED POSITRONIC TOOLS FOR BEST RESULTS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Automatic Crimp Tool</strong></td>
<td><strong>Mil. Equiv.</strong></td>
</tr>
<tr>
<td>9553-1-0-0</td>
<td>M9691-02</td>
</tr>
<tr>
<td>9553-1-0-0</td>
<td>M9691-02</td>
</tr>
<tr>
<td>9553-1-0-0</td>
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</tr>
<tr>
<td>9553-1-0-0</td>
<td>M9691-02</td>
</tr>
</tbody>
</table>

**Contact Information**

- Website: connectpositronic.com
- E-mail: info@connectpositronic.com

**Technical Specifications**

- Dimensions are in inches [millimeters].
- All dimensions are subject to change.

---

*Note: All table and sample contact dimensions can be ordered in quantities of 2,000 by adding letter “R” after the contact part number, see page 40 for further information.*
EXPLANATION OF INGRESS PROTECTION (IP) SYSTEM FOR ENCLOSURES

This system outlined in IEC 60529 is designed to indicate the standard degrees of protection: from (a) touch and ingress of solids, and (b) from ingress of liquids, which enclosures may exhibit, and must not be confused with explosion protection techniques. These degrees of protection are, however, frequently referred to in standards and literature, and hence are listed below.

The first numeral designates the degree of protection against touching live parts and ingress of solid foreign bodies, the second designates the degree of protection against ingress of liquid.

The higher the numeral of the first and second characteristic, the greater degree of protection the enclosure offers, e.g. IP55 meets all the less onerous degrees such as IP22, IP23, IP34 and IP54. The term “weatherproof” is not included at present in the IP system but IP54 enclosures are frequently described in this way.

<table>
<thead>
<tr>
<th>SOLID FOREIGN BODIES</th>
<th>LIQUIDS</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FIRST CHARACTERISTIC NUMERAL</strong></td>
<td><strong>OBJECT SIZE</strong></td>
</tr>
<tr>
<td>0</td>
<td>No protection of persons against contact with live or moving parts inside the enclosure. No protection of equipment against ingress of solid foreign bodies.</td>
</tr>
<tr>
<td>1</td>
<td>Protection against accidental or inadvertent contact with live or moving parts inside the enclosure by a large surface of the human body, e.g. a hand, but not protection against deliberate access to such parts. Protection against ingress of large solid foreign bodies.</td>
</tr>
<tr>
<td>2</td>
<td>Protection against contact with live or moving parts inside the enclosure by fingers. Protection against ingress of medium size solid foreign bodies.</td>
</tr>
<tr>
<td>3</td>
<td>Protection against contact with live or moving parts inside the enclosure by tools, wires or such objects of thickness greater than 2.5 mm. Protection against ingress of small solid foreign bodies.</td>
</tr>
<tr>
<td>4</td>
<td>Protection against contact with live or moving parts, inside the enclosure by tools, wires or such objects of thickness greater than 1 mm. Protection against ingress of small solid foreign bodies.</td>
</tr>
<tr>
<td>5</td>
<td>Complete protection against contact with live or moving parts inside the enclosure. Protection against harmful deposits of dust. The ingress of dust is not totally prevented, but dust cannot enter an amount sufficient to interfere with satisfactory operation of the equipment enclosed.</td>
</tr>
<tr>
<td>6</td>
<td>Complete protection against contact with live or moving parts inside the enclosure. Protection against ingress of dust.</td>
</tr>
<tr>
<td>7</td>
<td></td>
</tr>
<tr>
<td>8</td>
<td></td>
</tr>
</tbody>
</table>
### DESCRIPTION OF NEMA ENCLOSURE TYPES

<table>
<thead>
<tr>
<th>TYPE</th>
<th>INTENDED USE AND DESCRIPTION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Indoor use primarily to provide a degree of protection against limited amounts of falling dirt.</td>
</tr>
<tr>
<td>2</td>
<td>Indoor use primarily to provide a degree of protection against limited amounts of falling water and dirt.</td>
</tr>
<tr>
<td>3</td>
<td>Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and damage from external ice formation.</td>
</tr>
<tr>
<td>3R</td>
<td>Outdoor use primarily to provide a degree of protection against rain, sleet and damage from external ice formation.</td>
</tr>
<tr>
<td>3S</td>
<td>Outdoor use primarily to provide a degree of protection against rain, sleet, windblown dust and to provide for operation of external mechanisms when ice laden.</td>
</tr>
<tr>
<td>4</td>
<td>Indoor or outdoor use primarily to provide a degree of protection against windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.</td>
</tr>
<tr>
<td>4X</td>
<td>Indoor or outdoor use primarily to provide a degree of protection against corrosion, windblown dust and rain, splashing water, hose-directed water and damage from external ice formation.</td>
</tr>
<tr>
<td>5</td>
<td>Indoor use primarily to provide a degree of protection against settling airborne dust, falling dirt and dripping noncorrosive liquids.</td>
</tr>
<tr>
<td>6</td>
<td>Indoor or outdoor use primarily to provide a degree of protection against hose-directed water and the entry of water during occasional temporary submersion at a limited depth and damage from external ice formation.</td>
</tr>
<tr>
<td>6P</td>
<td>Indoor or outdoor use primarily to provide a degree of protection against hose-directed water, the entry of water during prolonged submersion at a limited depth and damage from external ice formation.</td>
</tr>
<tr>
<td>12, 12K</td>
<td>Indoor use primarily to provide a degree of protection against circulating dust, falling dust, falling dirt and dripping noncorrosive liquids.</td>
</tr>
<tr>
<td>13</td>
<td>Indoor use primarily to provide a degree of protection against dust, spraying of water, oil and noncorrosive coolant.</td>
</tr>
</tbody>
</table>

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COMPARISON BETWEEN NEMA ENCLOSURE TYPE NUMBERS AND IEC ENCLOSURE CLASSIFICATION DESIGNATIONS

IEC Publication 60529, Classification of Degrees of Protection Provided by Enclosures, provides a system for specifying the enclosures of electrical equipment on the basis of the degree of protection provided by the enclosure. IEC 60529 does not specify degrees of protection against mechanical damage of equipment, risk of explosions or conditions such as moisture (produced for example by condensation), corrosive vapors, fungus or vermin. NEMA Standards Publication 250 does test for environmental conditions such as corrosion, rust, icing, oil and coolants. For this reason, and because the tests and evaluations for other characteristics are not identical, the IEC Enclosure Classification Designations cannot be exactly equated with NEMA Enclosure Type Numbers.

The IEC designation consists of the letters IP followed by two numerals. The first characteristic numeral indicates the degree of protection provided by the first enclosure with respect to persons and solid foreign objects entering the enclosure. The second characteristic numeral indicates the degree of protection provided by the enclosure with respect to the harmful ingress of water.

The Table provides an approximate equivalent conversion from NEMA Enclosure Type Numbers to IEC Enclosure Classification Designations. The NEMA Types meet or exceed the test requirements for the associated IEC Classifications; for this reason the Table cannot be used to convert exactly from IEC Classifications to NEMA Types.

COMPARISON OF NEMA TYPE NUMBERS TO IEC CLASSIFICATION DESIGNATIONS
(Cannot be used to convert IEC Classification Designations to NEMA Type Numbers)

<table>
<thead>
<tr>
<th>NEMA ENCLOSURE TYPE NUMBER</th>
<th>IEC ENCLOSURE CLASSIFICATION DESIGNATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IP10</td>
</tr>
<tr>
<td>2</td>
<td>IP11</td>
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<td>3</td>
<td>IP54</td>
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<td>3r</td>
<td>IP14</td>
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<td>3s</td>
<td>IP54</td>
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<tr>
<td>4 and 4x</td>
<td>IP56</td>
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<td>5</td>
<td>IP52</td>
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<tr>
<td>6 and 6p</td>
<td>IP67</td>
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<tr>
<td>12 and 12K</td>
<td>IP52</td>
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<td>13</td>
<td>IP54</td>
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Note: This comparison is based on tests specified in IEC Publication 60529.
Positronic offers a full line of D-subminiature connectors in a wide variety of contact variants and package sizes with press-fit, solder and cable terminations. All Positronic connector products provide quality, reliability and flexibility.

**HIGH PERFORMANCE D-SUBMINIATURE CONNECTORS**

Standard and high density connectors manufactured to MIL-PRF-24308, Class M; Goddard Space Flight Center S-311-P-4 and Goddard Space Flight Center S-311-P-10.

**COMPLIANT PRESS-IN CONNECTORS**

Standard and high density connectors
Straight and right angle (90°) printed board mount
Low press-in force eliminates stress on printed circuit board during insertion.

**COMBO-D CONNECTORS**

Connectors with signal, shielded, power, thermocouple or high voltage contacts in a single package. Power press-fit terminations now available.

**DUAL PORT CONNECTORS**

Right angle (90°) printed board mount connectors assembled stacked to maximize real estate; contact variants 9 through 62; available in standard density high density, and mixed density.
Positronic HIGH RELIABILITY Products

**POWER**

**Contact Sizes:** 0, 8, 12, 16, 20, 22 and 24

**Current Ratings:** To 200 amperes per contact

**Terminations:** Crimp and fixed cable connector, straight solder, right angle (90°) compliant press-in

**Configurations:** Multiple variants in a variety of package sizes

**Compliance:** PICMG 2.11, PICMG 3.0, VITA 41, DSCC, GSFC S-311-P-4, GSFC S-311-P-10

**FEATURES:**
- High current density
- Energy saving - low contact resistance
- AC/DC operation in a single connector
- Signal contacts for hardware management
- Blind mating
- Sequential mating
- Large surface area contact mating system
- Wide variety of accessories
- Customer-specified contact arrangements
- Modular tooling which produces a single piece connector insert

**D-SUBMINIATURE**

**Contact Sizes:** 8, 16, 20 and 22

**Current Ratings:** To 13 amperes nominal

**Terminations:** Crimp, wire solder, straight solder, right angle (90°) compliant press-in

**Configurations:** Multiple variants in both standard and high densities, thirty package sizes

**Qualifications:** MIL-DTL-28748, SAE AS39029, CCITT V.35

**FEATURES:**
- Two performance levels available: industrial quality and military quality
- A wide variety of accessories
- Broad selection of contact arrangement and package sizes
- Connector coding device (keying) options

**RECTANGULAR**

**Contact Sizes:** 8, 16, 20 and 22

**Current Ratings:** To 100 amperes

**Terminations:** Crimp, wire solder, straight solder, right angle (90°) compliant press-in

**Configurations:** Multiple variants in both standard and high densities, seven connector housing sizes

**Qualifications:** MIL-DTL-24308, GSFC S-311-P-4, GSFC S-311-P-10, SAE AS39029, DSCC

**FEATURES:**
- Four performance levels available for best cost/performance ratio: professional, industrial, military and space-flight quality
- Options include high voltage, coax, thermocouple and air coupling contacts; environmentally sealed and dual port connector packages including mixed density contacts
- Broad selection of accessories
- Size 20 and 22 contacts suitable for use in carrying power
- IP65, IP67

**CIRCULAR**

**Contact Sizes:** 8, 12, 16, 20 and 22

**Current Ratings:** To 40 amperes nominal

**Terminations:** Feedthrough is standard; flying leads and board mount available upon request

**Configurations:** See D-subminiature and circular configurations above

**Compliance:** Space-D32

**FEATURES:**
- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature ≤ 8x10^-9 mbar.l/s under a vacuum 1.5x10^-3 mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

**CABLE**

**Contact Sizes:** 8, 12, 16, 20 and 22

**Current Ratings:** To 40 amperes nominal

**Terminations:** Feedthrough is standard; flying leads and board mount available upon request

**Configurations:** See D-subminiature and circular configurations above

**Compliance:** Space-D32

**FEATURES:**
- Shorten the supply chain and reduce additional costs and delays by “cablizing” your Positronic connector selection
- Overmolding available
- Shielded and environmentally sealed versions available
- Power cables and access boxes which meet the SAE J2496 specification

**HERMETIC**

**Contact Sizes:** 8, 12, 16, 20 and 22

**Current Ratings:** To 40 amperes nominal

**Terminations:** Feedthrough is standard; flying leads and board mount available upon request

**Configurations:** See D-subminiature and circular configurations above

**Compliance:** Space-D32

**FEATURES:**
- Intended for use as an electrical feedthrough in high vacuum applications
- Helium leakage rate at ambient temperature ≤ 8x10^-9 mbar.l/s under a vacuum 1.5x10^-3 mbar
- Signal, power, coax and high voltage versions available
- Connectors can be mounted on flange assembly per customer specification

For more information, visit [www.connectpositronic.com](http://www.connectpositronic.com) or call your nearest Positronic sales office listed on the back of this catalog.