ZIPport STD Series Multi-Wire Connectors

Features

- Available in 3A, 10A, 16A, 6B, 10B, 16B, 24B, and 32B sizes
- Heavy-duty metal housings in polyester powder coated die-cast aluminum alloy or self-extinguishing thermoplastic housing
- Single locking system (one lever locked on two pegs) or double locking system (two levers locked on four pegs)
- Mechanical duration of 500 cycles
- Operating temperatures from -40 to 125°C [-40 to 257°F]
- IP66 degree of protection with enclosure when coupled
- NEMA/UL Type 1, 4, 4X, 12 protection with enclosure when coupled.
- Conforms with EN61984, VDE 0110, VDE 0627,EN 175301-801, and UL 1977, UL50, UL50E standards
- UL and CE approvals

Housings

Hoods

- Available with top entry and side entry cable passages
- Standard and high-construction profiles
- Threaded cable passages with Pg threads (EN 60423) with optional Pg to NPT adapters
- Stainless steel or thermoplastic locking pegs
- Accessories include cable glands and Pg thread to NPT adapters

Bases, Couplers and Covers

- Surface and bulkhead mounted bases
- Two cable passages on surface mount bases
- Seal gaskets made of anti-aging, oil-resistant and fuel-resistant vinyl nitrile elastomer
- Locking levers made of galvanized steel or self-extinguishing glass-filled thermoplastic; guarantees perfect closing and sealing

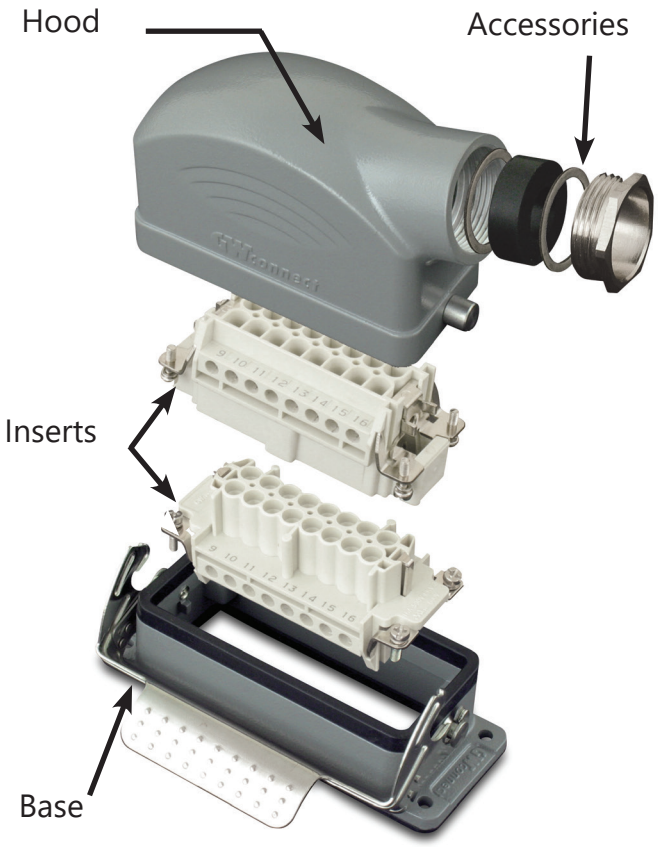
Inserts

- Self-extinguishing thermoplastic reinforced with glass fibers
- Asymmetric guide rails prevent incorrect coupling
- Captive installation screws allow for easy and secure installation to bases and hoods
- Laser-printed or molded terminal/contact positions on both sides of insert
- Copper alloy contacts with hard silver or gold plating - available with stainless steel captive screw terminal or machined crimp contact
- Wide contact surface for ground terminals
- IP20 without enclosures
- Suitable for stranded and solid conductors

Agency Approvals

- UL Recognized File number E342543
- CE
- RoHS
- NEMA 250

To obtain the most current agency approval information, see the Agency Compliance & Certifications Checklist section on the specific part number's web page.



Accessories

A wide range of accessories including:

- Pg to NPT adapters
- Plugs with gaskets
- Cable glands (IP66 & IP68)
- DIN rail mounting kits
- Crimp tools
- Replacement screws, code pins and gaskets
- Insert plates (with cutouts, reducers, blank)
- Coding pins

ZIPport STD Series Multi-Wire Connectors

General Characteristics

Application Examples

- Electronic machinery
- Robots
- Control equipment
- Power connections
- Control and signal circuits
- Packaging machinery
- Theatrical applications
- Industrial equipment
- Electrical panels

Inserts

ZIPport multi-wire connectors require one male and one female insert. The inserts are available in multiple pole configurations from 3 poles plus ground up to 144 poles plus ground and with termination sizes ranging from 26 to 12 AWG, 10 to 80 Amps.

ZIPport inserts are made of UL 94 V-0 rated self-extinguishing thermoplastic resin rated at a maximum temperature of 125°C (257°F). The inserts are available in screw terminal and crimp style contact block connections. The contacts are copper alloy with a hard silver or gold plating. The plastic insulators are numbered on both sides by laser printing or molding in accordance with EN 60068-2-70.

- Suitable for use with alternating (AC) or direct current (DC)
- Leading protective ground
- Polarized for correct mating
- Interchangeable for male and female inserts in hoods and bases
- Captive screws
- Can be used with hoods and bases, or with rack and panel applications

Housings

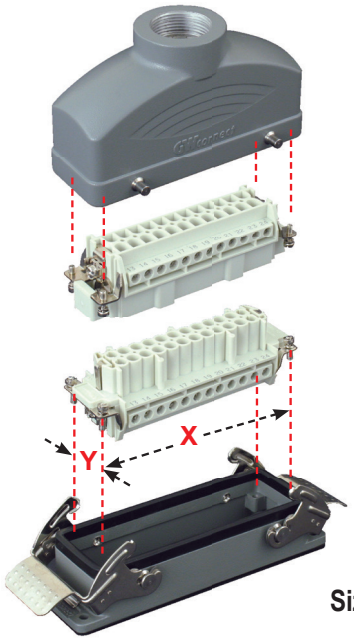
The housings for the ZIPport multi-wire connectors consist of a hood that mates with a base or a coupler.

They are made of die-cast aluminum with a polyester powder finish or from self-extinguishing thermoplastic and are suitable for use in industrial applications.

All housings are available in a standard profile. Several are offered with a high construction (HC) profile that allows more room for wiring the higher density inserts.

A single or double lever locking system assures coupling stability and protection against accidental opening. The locking system is comprised of stainless steel or glass filled thermoplastic levers, with compatible interlocking pegs.

Size and Identification



Size 24B

The size of each type of connector is determined by the distance between the center points of the four installation screws. These four points are common to both the insert and the housing. This is indicated by "X"-"Y" in the illustration above.

The table below lists the size identification and the actual X-Y distance for each type of connector offered.

Size	*Distance X-Y*
3A	21 x 21 mm* [0.83 x 0.83 in]
10A	49.5 x 16 mm [1.95 x 0.63 in]
16A	66 x 16 mm [2.60 x 0.63 in]
6B	44 x 27 mm [1.73 x 1.06 in]
10B	57 x 27 mm [2.24 x 1.06 in]
16B	77.5 x 27 mm [3.05 x 1.06 in]
24B	104 x 27 mm [4.09 x 1.06 in]
32B	77.5 x 62 mm [3.05 x 2.44 in]

* The center distance cannot be given because the 3A inserts have only one screw: 21 x 21 indicates the size of the sectioned insert.

STD Series Multi-Wire Connectors Specifications

Technical Characteristics

Connector Size			3A					10A		16A	
Inserts	Number of Poles		3+PE	4+PE	5+PE	7+PE	12+PE	10+PE	15+PE	16+PE	25+PE
	UL/CSA Rated Voltage*		600V								
	Maximum Rated Current		10A		16A	10A		16A	10A	16A	10A
	EN 61984 (2001-11) Pollution Degree 3	Rated Voltage AC/DC	230/400V			250V	400V	250V			
		Impulse Withstand Voltage	4kV				6kV	4kV			
	EN 61984 (2001-11) Pollution Degree 2	Rated Voltage	230/400V		320/500V	230/400V	400/690V	230/400V			
		Impulse Withstand Voltage	4kV				6kV	4kV			
	Continuous Current Carrying Capacity		Refer to Electrical Engineering section charts								
	Insulation Resistance		10^{10} Ω								
	Material		Polycarbonate								
	Temperature Range		-40 to 125°C [-40 to 257°F]								
	Flammability		UL 94 V-0 GWT 960°								
	Degree Protection	With Housing	IP66, NEMA/UL (Type 1, 4, 4x, 12)								
		Without Housing	IP20								
	Mechanical Working Life		500 Cycles								
	Conductor Termination	Screw Terminals	√	√	N/A	N/A	N/A	√	N/A	√	N/A
		Crimp Contacts	N/A	N/A	√	√	√	√	√	√	√
Contacts	Material		Hard-silver plated (2µm Au) or gold plated copper alloy								
	Minimum Recommended Load (voltage & current)		5V/5mA AC/DC (silver plated)								
	Contact Resistance		≤ 1mΩ			≤ 3mΩ		≤ 1mΩ	≤ 3mΩ	≤ 1mΩ	≤ 3mΩ
	Screw Terminal Wire Size	mm^2	0.5-2.5		N/A			0.5-2.5	N/A	0.5-2.5	N/A
		AWG	20-14		N/A			20-14	N/A	20-14	N/A
	Screw Terminal Tightening Test Torque		0.5 Nm		N/A			0.5 Nm	N/A	0.5 Nm	N/A
	Screw Terminal Stripping Length		7.0 mm		N/A			7.0 mm	N/A	7.0 mm	N/A
	Crimp Terminal Wire Size	mm^2	N/A		0.5-2.5		0.14-2.5	0.14-4.0	0.14-2.5	0.14-4.0	0.14-2.5
		AWG	N/A		26-14			26-12	26-14	26-12	26-14
	Crimp Terminal Stripping Length		N/A		7.5 mm		N/A	7.5 mm	N/A	7.5 mm	N/A
Thermoplastic Hoods/ Bases/Couplers/Covers	Material		Glass filled polyamide					N/A			
	Locking Element		Glass filled polyamide lever and peg								
	Flammability		UL 94 V-0 GWT 960°								
	Housings Seal		NBR (Nitrile rubber)								
	Degree of Protection Acc. to EN 60529 (coupled)		IP66								
	Temperature Range		-40 to 125°C [-40 to 257°F]								
	Thread		Metric EN 50262 Pg DIN 40430								
Aluminum Hoods/Bases/ Couplers/Covers	Material		Die cast aluminum alloy, Polyester powder coated								
	Locking Element		Stainless steel lever and peg								
	Housings Seal		NBR (Nitrile)								
	Degree of Protection Acc. to EN 60529 (coupled) NEMA 250, UL50, 50E		IP66, NEMA/UL (Type 1, 4, 4x, 12)								
	Temperature Range		-40 to 125°C [-40 to 257°F]								
	Thread		Metric EN50262 Pg DIN 40430								

*** Connectors should not be coupled and decoupled under electrical load.**

STD Series Multi-Wire Connectors Specifications

Technical Characteristics										
Connector Size			6B		10B		16B			
Inserts	Number of Poles		6+PE	24+PE	10+PE	42+PE	6+PE	16+PE	40+PE	72+PE
	UL/CSA Rated Voltage*		600V							
	Maximum Rated Current		16A	10A	16A	10A	35A	16A	10A	
	EN 61984 (2001-11) Pollution Degree 3	Rated Voltage AC/DC	500V	250V	500V	250V	830V	500V	250V	
		Impulse Withstand Voltage	6kV	4kV	6kV	4kV	6kV		4kV	
	EN 61984 (2001-11) Pollution Degree 2	Rated Voltage	400/690V	230/400V	400/690V	230/400V	1000V	400/690V	230/400V	
		Impulse Withstand Voltage	6kV	4kV	6kV	4kV	8kV	6kV	4kV	
	Continuous Current Carrying Capacity		Refer to Electrical Engineering section charts							
	Insulation Resistance		10^{10} Ω							
	Material		Polycarbonate							
	Temperature Range		-40 to 125°C [-40 to 257°F]							
	Flammability		UL 94 V-0 GWT 960°							
	Degree Protection	With Housing	IP66, NEMA/UL (Type 1, 4, 4x, 12)							
		Without Housing	IP20							
	Mechanical Working Life		500 Cycles							
	Conductor Termination	Screw Terminals	√	N/A	√	N/A	√	√	N/A	N/A
		Crimp Contacts	√	√	√	√	N/A	√	√	√
Contacts	Material		Hard-silver plated (2µm Au) or gold plated copper alloy							
	Minimum Recommended Load (voltage & current)		5V/5mA AC/DC (silver plated)							
	Contact Resistance		≤ 1mΩ	≤ 3mΩ	≤ 1mΩ	≤ 3mΩ	≤ 0.5 mΩ	≤ 1mΩ	≤ 3mΩ	
	Screw Terminal Wire Size	mm ²	0.5-2.5	N/A	0.5-2.	N/A	1.5-6	0.5-2.5	N/A	
		AWG	20-14	N/A	20-14	N/A	16-10	20-14	N/A	
	Screw Terminal Tightening Test Torque		0.5 Nm	N/A	0.5 Nm	N/A	1.2 Nm	0.5 Nm	N/A	
	Screw Terminal Stripping Length		7.0 mm	N/A	7.0 mm	N/A	10.5 mm	7.0 mm	N/A	
	Crimp Terminal Wire Size	mm ²	0.14-4	0.14-2.5	0.14-4	0.14-2.5	N/A	0.14-4	0.14-2.5	
		AWG	26-12	26-14	26-12	26-14	N/A	26-12	26-14	
	Crimp Terminal Stripping Length		7.5 mm	8mm	7.5 mm	8mm	N/A	7.5 mm	8mm	
Aluminum Hoods/ Bases/Couplers/ Covers	Material		Die cast aluminum alloy, Polyester powder coated							
	Locking Element		Stainless steel lever and peg							
	Housings Seal		NBR (Nitrile)							
	Degree of Protection Acc. to EN 60529 (coupled) NEMA 250, UL50, 50E		IP66, NEMA/UL (Type 1, 4, 4X, 12)							
	Temperature Range		-40 to 125°C [-40 to 257°F]							
	Thread		Metric EN50262 Pg DIN 40430							

*** Connectors should not be coupled and decoupled under electrical load.**

STD Series Multi-Wire Connectors Specifications

Technical Characteristics								
Connector Size			24B				32B	
Inserts	Number of Poles		4+8+PE	24+PE	64+PE	108+PE	32+PE	144+PE
	UL/CSA Rated Voltage*		600V					
	Maximum Rated Current		Power: 80A / Signal: 16A	16A	10A		16A	10A
	EN 61984 (2001-11) Pollution Degree 3	Rated Voltage AC/DC	830V / 400V	500V	250V		500V	250V
		Impulse Withstand Voltage	8kV / 6kV	6kV	4kV		6kV	4kV
	EN 61984 (2001-11) Pollution Degree 2	Rated Voltage	1000V/400/690V	400/690V	230/400V		400/690V	230/400V
		Impulse Withstand Voltage	8kV	6kV	4kV		6kV	4kV
	Continuous Current Carrying Capacity		Refer to Electrical Engineering section charts					
	Insulation Resistance		10^{10} Ω					
	Material		Polycarbonate					
	Temperature Range		-40 to 125°C [-40 to 257°F]					
	Flammability		UL 94 V-0 GWT 960°					
	Degree Protection	With Housing	IP66, NEMA/UL (Type 1, 4, 4X, 12)					
		Without Housing	IP20					
	Mechanical Working Life		500 Cycles					
	Conductor Termination	Screw Terminals	√	√	N/A	N/A	√	N/A
		Crimp Contacts	N/A	√	√	√	√	√
Contacts	Material		Hard-silver plated (2µm Au) or gold plated copper alloy					
	Minimum Recommended Load (voltage & current)		5V/5mA AC/DC (silver plated)					
	Contact Resistance		≤ 0.3 mΩ / 1mΩ	≤ 1mΩ	≤ 3mΩ		≤ 1mΩ	≤ 3mΩ
	Screw Terminal Wire Size	mm²	1.5-16 / 0.5-2.5	0.5-2.5	N/A		0.5-4.0	N/A
		AWG	16-6 AWG / 20-14	20-14	N/A		20-12	N/A
	Screw Terminal Tightening Test Torque		1.2 Nm / 0.5 Nm	0.5 Nm	N/A		0.5 Nm	N/A
	Screw Terminal Stripping Length		14mm / 7.0 mm	7.0 mm	N/A		7.0 mm	N/A
	Crimp Terminal Wire Size	mm²	N/A	0.14-4	0.14-2.5		0.14-4	0.14-2.5
		AWG	N/A	26-12	26-14		26-12	26-14
	Crimp Terminal Stripping Length		N/A	7.5 mm	8mm		7.5 mm	N/A
Aluminum Hoods/ Bases/Couplers/ Covers	Material		Die cast aluminum alloy, Polyester powder coated					
	Locking Element		Stainless steel lever and peg					
	Housings Seal		NBR (Nitrile)					
	Degree of Protection Acc. to EN 60529 (coupled) NEMA 250, UL50, 50E		IP66, NEMA/UL (Type 1, 4, 4X, 12)					
	Temperature Range		-40 to 125°C [-40 to 257°F]					
	Thread		Metric EN50262 Pg DIN 40430					

*** Connectors should not be coupled and decoupled under electrical load.**

STD Series Multi-Wire Connectors

Conductor Termination

Overview

Two types of conductor termination are available for ZIPport inserts:

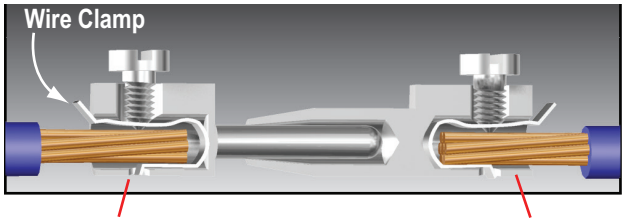
- Screw terminations
- Crimp terminations

Screw Terminations

Screw terminations consist of contacts made of silver-plated copper alloy and are incorporated with a wire clamp (with the exception of the size 3A inserts and size 24B with 80A contacts) for firmly securing the conductors. The screw terminals use stainless steel captive screws and meet VDE 0609 / EN 60999 standards.

Proper conductor installation requires no special preparation when using inserts with the wire clamp terminals (no wire ferrules). The table below lists the current rating, maximum wire gauge and stripping lengths.

Current Rating	Max Wire Gauge		Stripping Length mm (in)
	(mm ²)	AWG	
10A	2.5	14	4.5 (0.18)
16A	2.5	14	7 (0.28)
35A	6.0	10	11.5 (0.45)
16/80A	25/16	14/5	7 (0.28)/14 (0.55)



Screw Terminals with Clamps

The value of tensile strength of conductors in accordance with the dimensions of the screws and the wires are shown in the following table:

Wire Gauge mm² (AWG)	1.5 (16)	2.5 (14)	4 (12)	6 (10)	10 (8)	16 (6)
Size of Screw	M3	M3	M3.5	M4	M4	M6
Tensile Strength of Stranded Wire (N)	40	50	60	80	90	100

Increasing the tightening torque does not necessarily improve the contact resistance. The screw torques are selected according to standard EN 60999-1, to provide excellent mechanical, thermal and electrical behavior. The conductor or terminal may be damaged if the recommended values are significantly exceeded.

Insert Screw Specifications

Insert Size	Screw Type	Screw Size	Tightening Torque (Nm)	Tightening Torque (in-lbs)	Recommended Screwdriver Size	Recommended Screwdriver Part
3A	10 Amp Terminal	M3	0.25	2.2	0.4 x 2.5	TW-SD-VSL-2
	Installation					
	Ground	M3.5				
10A, 16A	16 Amp Terminal	M3	0.50	4.4	0.5 x 3.0	TW-SD-SL-1
	Installation					
	Ground	M4				
6B, 10B	16 Amp Terminal	M3	0.50	4.4	Ph 0-0.8 x 4	TW-SD-VSL-3
	Installation					
	Ground	M4	1.2	10.6	Ph 2 1.0 x 5.5	TW-SD-VSL-4
16B	35 Amp Terminal	M4	1.2	10.6	Ph 1 - 0.8 x 4	TW-SD-VSL-3
	16 Amp Terminal	M3	0.50	4.4	Ph 0-0.8 x 4	
	Installation					
	Ground	M4	1.2	10.6	Ph 2 1.0 x 5.5	TW-SD-VSL-4
24B	80 Amp Terminal	M6	2.5	22.1	1.0 x 5.5	
	16 Amp Terminal	M3	0.50	4.4	Ph 0-0.8 x 4	TW-SD-VSL-3
	Installation					
	Ground	M4	1.2	10.6	Ph 2 1.0 x 5.5	TW-SD-VSL-4
32B*	16 Amp Terminal	M3	0.50	4.4	Ph 0-0.8 x 4	TW-SD-VSL-3
	Installation					
	Ground	M4	1.2	10.6	Ph 2 1.0 x 5.5	

Note: Size 32B requires 2 size 16B insert

Crimp Terminations

Crimp terminations consist of contacts made of silver or gold-plated copper alloy. Crimp terminations are accomplished by applying a crimp contact to the conductor by means of a crimping tool. Crimp contacts are available in several sizes:

10 amp, 26-14 AWG ; 16 amp, 26-12 AWG

A perfect crimp connection is gas-tight, corrosion free and is equal to a cold weld of the parts being connected. Wires to be connected must be carefully matched with the correct wire size of crimp contacts.

The requirements for crimp connectors are depicted in IEC 60352, part 2.

Note: Low currents and voltages:

ZIPport standard contacts (screw and crimp) have a silver plated surface. This metal has excellent conductive properties. During the contacts's lifetime, the silver surface generates a black oxide layer due to its affinity to sulphur (always present in the atmosphere). This layer is conductive smooth and very thin and is partly interrupted when the contacts are mated and non mated, thus guaranteeing very low contact resistances. In the case of very low current or voltage, small changes to the transmitted signal may be encountered.

In applications where voltage and current are lower than 5V and 5mA, and in extremely aggressive environments, ZIPport gold plated contacts are recommended. See ZIPport spare parts and accessories pages.

STD Series Multi-Wire Connectors

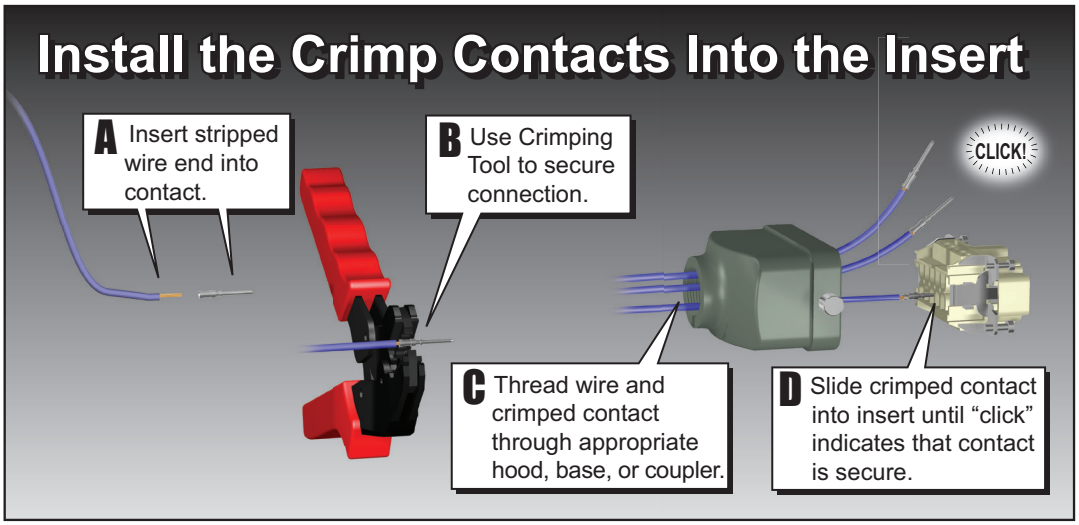
Crimp Contact to Insert Installation

Proper installation of the crimp contacts is important for a good electrical and mechanical connection. The following steps will ensure correct installation.

Step 1: Select the Crimp Contacts

Select a crimp contact based on the rating of the Insert you are using - 10 or 16 amps; the gender - male or female; and gauge of wire being used.

Step 2:



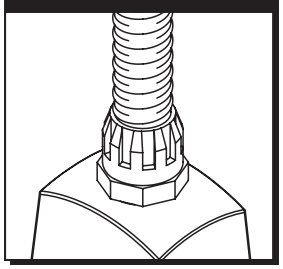
Step 3: Install the Insert into the Housing

Now that the crimp contacts are installed, the insert can be placed into the housing by aligning the corner installation screws of the insert with the screw holes located in the corners of the housing. Tighten the screws according to the tightening torques listed in the Insert Screw Specifications table in this document.

Wire Entry Connection

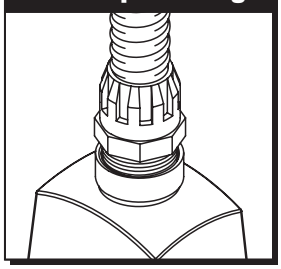
ZIPports offer four types of connection for wire entry into the housings. Two entries accommodate flex conduit and two accept cable.

Metric/Pg Connection



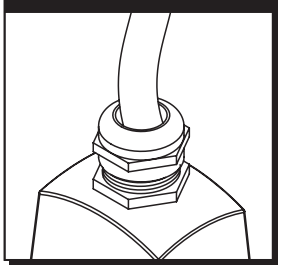
This is standard on all housings that offer a threaded wire entry. Sizes range from Pg 11 to Pg 36. This is for using fittings with a male Pg thread connection.

Adapter to NPT Pipe Fitting



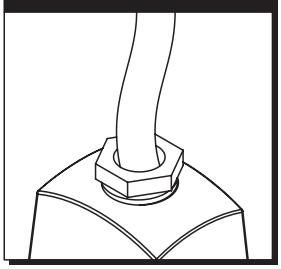
This adapter converts the Pg thread to an NPT thread. Sizes range from 3/8" to 1-1/4" in relation to the Pg threaded opening in the housing.

IP68 Cable Gland



For securing a cable to the housing. This is an all inclusive fitting that can be tightened without using separate washers.

IP66 Cable Gland with washer



For securing a cable to the housing. This gland is available in plastic or metal in relation to housing material. Includes two washers and four gaskets to accommodate a wide range of cable diameters.

ZIPport STD Series Multi-Wire Connectors

Standards

The inserts are designed and manufactured to conform with EN 61984, (IEC 61984), VDE 0627 and UL 1977/CSA C22.2 182.3 standards. They are certified and labeled with the cULus and CE marks. The connectors are therefore in conformance with both European/International and American systems. This permits them to be used in a wider range of applications worldwide.

• EN 61984	Connectors safety requirements and tests
• VDE 0627	Connectors (DIN VDE 0627)
• EN 60664-1	Insulation coordination for equipment within low-voltage systems
• EN 175 301-801	High density rectangular connectors, round removable crimp contacts
• EN 60947-7-1 part 7-1	Low-voltage switchgear and control gear, Ancillary equipment - Terminal blocks for copper conductors
• VDE 0110	Table 4 concerning clearance and creepage distances
• EN 60512	Connectors for electronic equipment, tests and measurements
• UL 1977	Component connectors for use in data, signal, control and power applications
• CSA.C22.2 No. 182.3	Special use attachment, plugs, receptacles and connectors
• EN 60529	Degree of protection provided by enclosures (IP degree)
• EN 50262	Metric cable glands for electrical installation
• EN 60423	Conduits for electrical purposes. Outside diameters of conduits for electrical installations and thread for conduits and fittings
• ISO 23570-2	Industrial automation system and integration. Distributed installation in industrial applications. Part 2: Hybrid communication bus.
• ISO 23570-3	Industrial automation system and integration. Distributed installation in industrial applications Part 3: Power distribution bus.
• DESINA® specifications	Specification to standardize electrical, hydraulic and pneumatic components and their interconnection on a common platform for CNC controlled machine tools and manufacturing lines.

(Distributed and Standardized Installation Technology), Studied by German Manufacturers of Machine Tool Association.

Directives and Declarations

NEMA-250 Declaration of Conformity

Metal and plastic enclosures for Multipole Industrial Connectors (Heavy Duty Connectors). Series STD, STD-HV, HE, HE-HV all sizes. Are designed and manufactured in conformity with NEMA 250-1991 Standard and meet the requirements of NEMA Type 4, 4x and 12.

2006/95/EC: LVD Directive

Directive 2006/95/EC of the European Parliament and of the council of 12 December 2006 on the harmonization of the laws of Members States relating to electrical equipment designed for use within certain voltage limits.

2002/95/EC: RoHS Directive

Directive 2002/95/EC of the European Parliament and of the Council of 27 January 2003 on the restriction of the use of certain hazardous substances in electrical and electronic equipment.

2008/35/EC: RoHS Directive amendment

Directive 2008/35/EC of the European Parliament and of the Council of 11 March 2008 amending Directive 2002/95/EC of the use of certain hazardous substances in electrical and electronic equipment (RoHS) as regards the implementing powers conferred on the Commission.

2004/108/EC EMC Directive

EMC, Electromagnetic Compatibility Directive.

In accordance with the European Directive that regulates the emission and the immunity of the equipment, for the products designed for EMC industrial applications.

Regulation (EC) No 1907/2006 of the European Parliament and of the Council of 18 December 2006 concerning the Registration Evaluation, Authorization and Restriction of Chemicals (REACH), establishing a European Chemicals Agency, amending Directive 1999/45/EC and repealing Council Regulation (EEC) No 793/93 and Commission Regulation (EC) No 1488/94 as well as Council Directive 76/769/EEC and Commission Directives 91/155/EEC, 93/67/EEC, 93/105/EEC and 2000/21/EC.

WARNING - ACCORDING TO EN 61984, CONNECTORS SHOULD NOT BE COUPLED AND DECOUPLED UNDER ELECTRICAL LOAD.

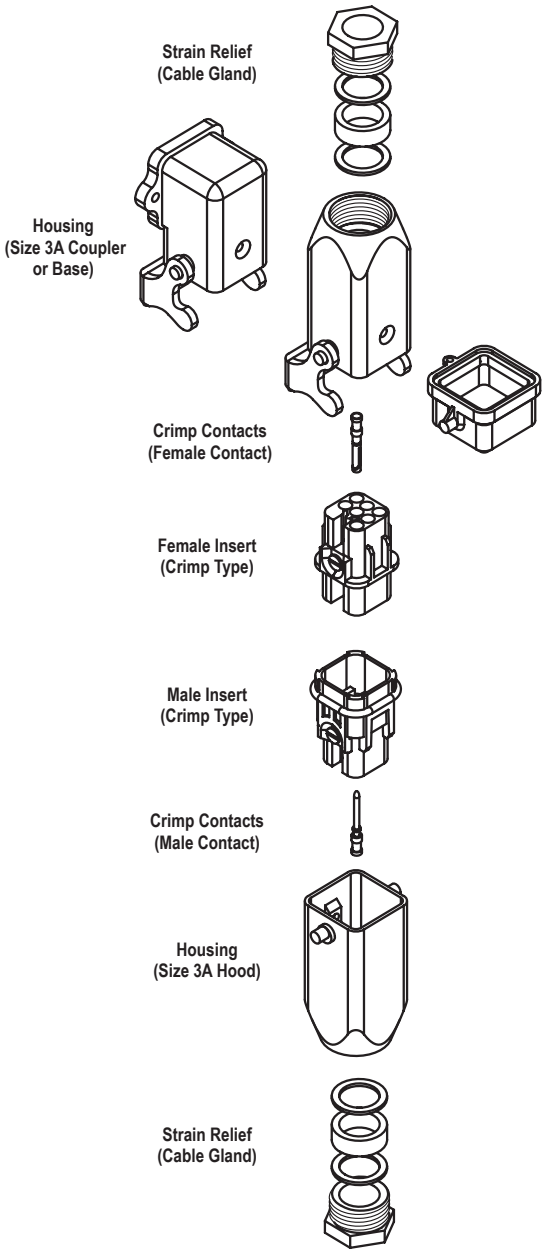
DESINA

c UL us CE

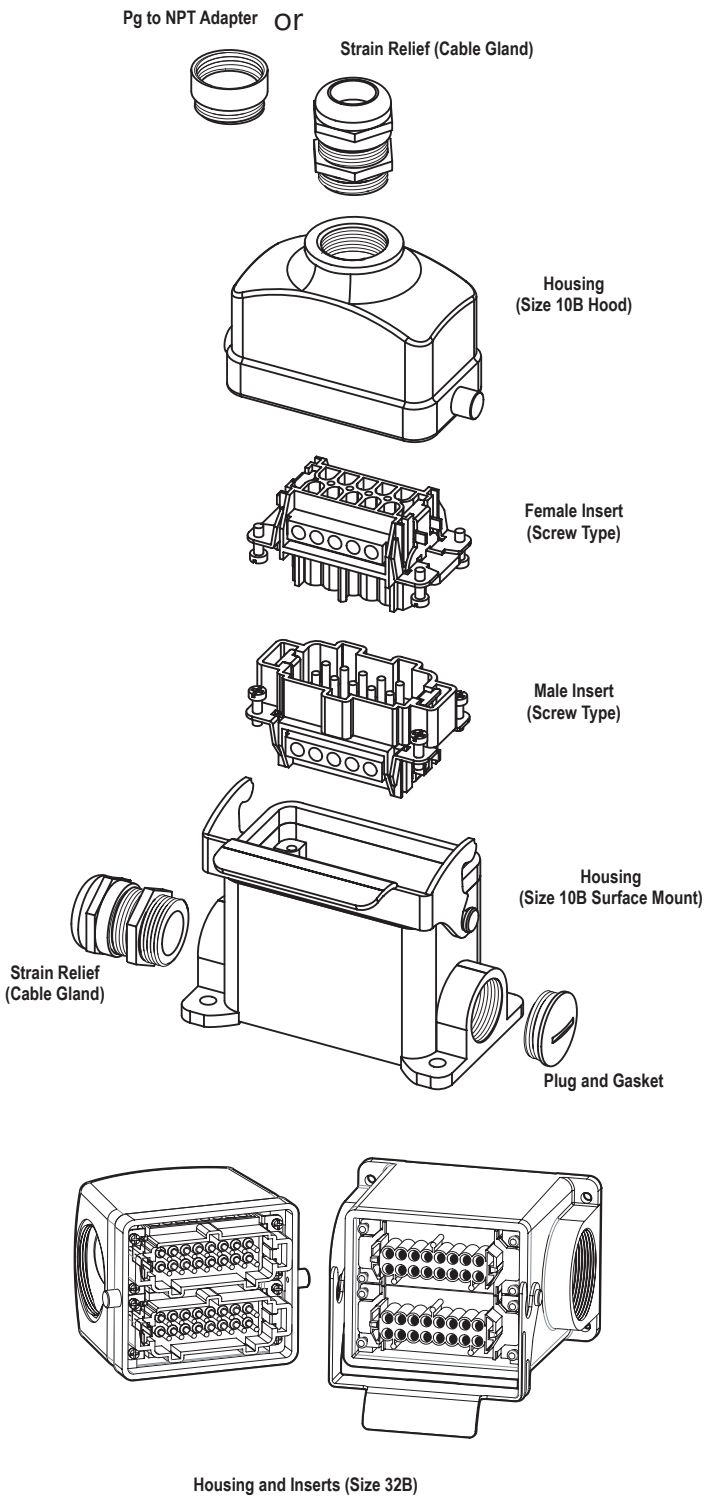
Type 1/4/4x/12

STD Series Multi-Wire Connectors

Crimp Contact Basic Assembly



Screw Terminal Basic Assembly



Housing and Inserts (Size 32B)