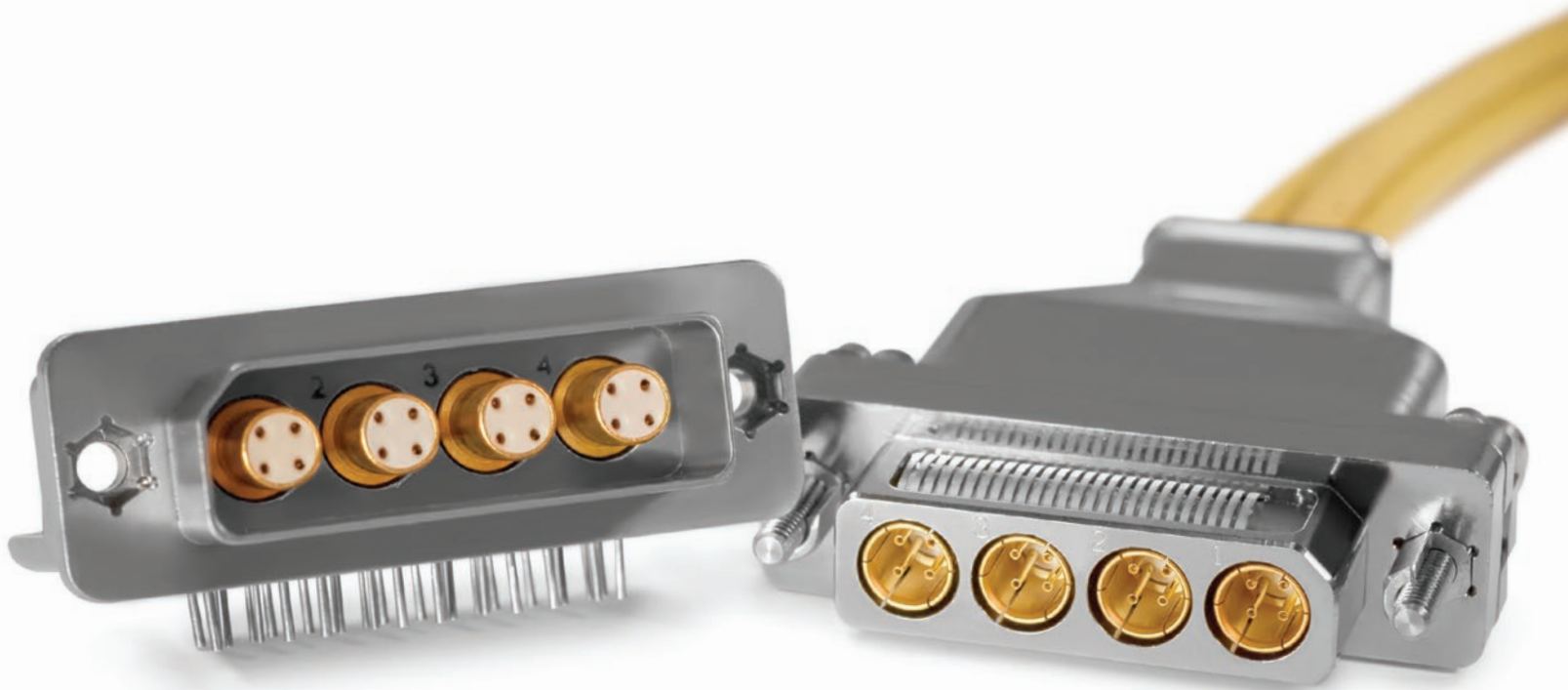


# RUGGED D-SUB CONNECTOR SERIES

*100  $\Omega$  Durable, High Speed Connectors*



## FEATURES

- ▶ **Standard non-keyed insert arrangements: 2, 4, 6, 8, 12, 16, 21 way; hybrid options available**
- ▶ **Multiple impedances available: 100  $\Omega$ , 110  $\Omega$ , 150  $\Omega$**
- ▶ **Data rates up to 6.25 Gbps**
- ▶ **Six position keyed and non-keyed jack post versions**
- ▶ **Common back shells with a wide assortment of accessories, guide hardware and sealing grommets**
- ▶ **Integrated EMI spring fingers offering superior EMI performance with low contact resistance**

## BENEFITS

- ▶ Product versatility/modularity
- ▶ Unparalleled immunity to shock and vibration
- ▶ Outstanding space saving on narrow mounted panels
- ▶ Superior mating
- ▶ Specifically designed for extreme durability and performance

# RUGGED D-SUB

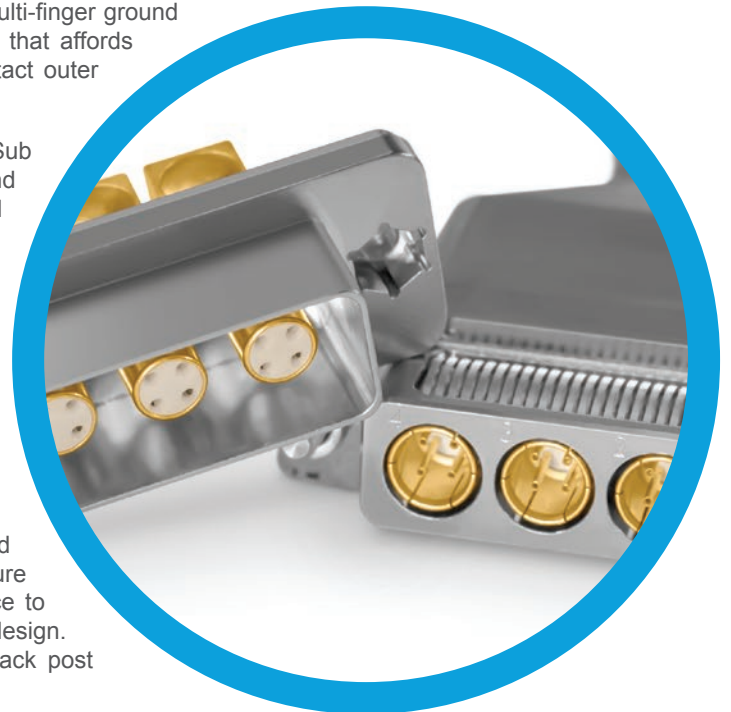
With decades of industry-leading experience with application-specific, high reliability interconnect solutions, Smiths Connectors knows the importance with high impedance D-Sub connectors to ground the outer shield of the twinax or quadax contact directly to the shell of the connector. Our Rugged D-Sub connector series does this with a multi-finger ground spring fixed around the shell to provide multi-point contact engagement that affords superior EMI shielding and extremely low contact resistance of the contact outer body to the connector flange.

Offered with 100  $\Omega$  quadax and/or differential pair twinax, the Rugged D-Sub connector series from Smiths Connectors ensures minimal RF noise and high durability of up to 1,000 mating cycles while meeting and exceeding all requirements of MIL-STD-202 for shock and vibration. Factory consultation is recommended when other impedances are required.

A conscious effort was taken in bringing this comprehensive interconnect solution to market to look at it through the eyes of customers. The end result is a rugged connector that embodies both innovation and common sense, combining easy of assembly with a leading-edge production tool method and innovative quality inspection.

When multiple high speed Rugged D-sub connectors are deployed within systems often electrical problems occur due to the incompatibility of the high speed D-sub plug to the receptacle. This can occur if one set of rugged D-sub connectors are differential twinax and the other is quadax. To ensure that the high speed connectors are correctly matched and in accordance to specific wiring requirements, we incorporated a keyed jack post into the design. Allowing for 36 possible keying combination, the six-positioned keyed jack post ensures correct mating every time.

Committed to developing the next generation of advanced interconnect solutions, Smiths Connectors delivers the critical edge that customers require with the Rugged D-Sub connectors series.



# TECHNICAL CHARACTERISTICS

MECHANICAL & ENVIRONMENTAL		STANDARDS
Temperature Rating	-65°C to 165°C	—
Durability	500 mate / unmate cycles min.	—
Corrosion	Meets requirements	MIL-STD-202 Method 101, Test Condition B
Shock	Meets requirements	MIL-STD-202 Method 213, Test Condition B
Vibration	Meets requirements	MIL-STD-202 Method 204, Test Condition B
Thermal Shock	Meets requirements	MIL-STD-202 Method 107, Test Condition B
MATERIALS & FINISHES		
Contact Body & Inner Contacts	BeCu, UNS C17200, C17300, TD04 Gold plating	ASTM-B196 — ASTM-B488
Other Metal Contact Parts	Brass, UNS C36000, H02 Gold plating	ASTM-B16 — ASTM-B488
Insulators	PTFE, Utlem 1000 or LCP	— —
Plug/Receptacle Shell	Aluminum 6061-T6 Electroless nickel plating	ASTM-B211 SAE AMS-C-26074
ELECTRICAL		
Contact Current Rating	3.0 A max.	—
DWV	500 VDC max.	—
Insulation Resistance	5,000 MΩ min. @ 200 VDC	—
Bandwidth	Up to 3 GHz	—
Data Rates	Exceeding 2 Gbps	—
Differential Pair Cable Impedance	150 Ω + 15 Ω 100 Ω + 10 Ω	—
Signal to Shield Cable Impedance	75 Ω + 10 Ω 50 Ω + 7 Ω	—

# DIMENSIONS

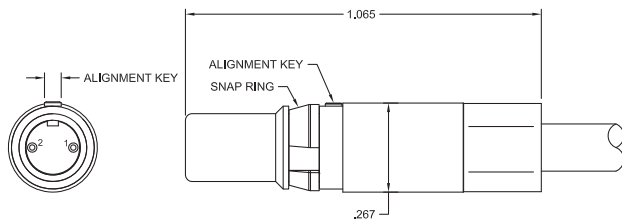
## Contacts, Keyed & Non-Keyed Shells

### ► SIZE 9 TWINAX/QUADRAX CONTACTS

100 Ω

#### TWINAX PIN CONTACT

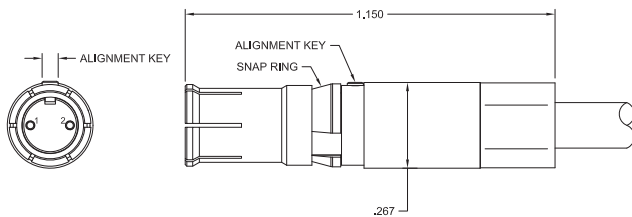
For use in Size 9 Quadrax/Twinax D-Sub Receptacle  
P/N: 012800-30XX and 052700-3XXX



PART NUMBER	CABLE TYPE	CABLE
<b>019234-2002</b>	Differential Twinax	540-1167-000
<b>019234-2017</b>	Flexible Twinax	540-1161-000
<b>019234-2018</b>	Flexible Twinax	540-1086-000

#### TWINAX SOCKET CONTACT

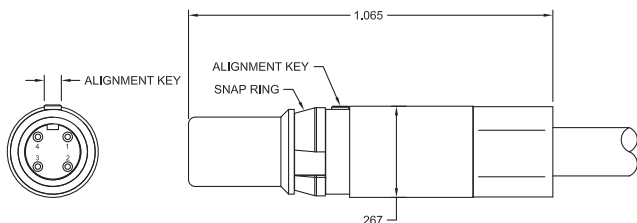
For use in Size 9 Quadrax/Twinax D-Sub Plug  
P/N: 012700-20XX and 052800-2XXX



PART NUMBER	CABLE TYPE	CABLE
<b>019134-2002</b>	Differential Twinax	540-1167-000
<b>019134-2017</b>	Flexible Twinax	540-1161-000
<b>019134-2018</b>	Flexible Twinax	540-1086-000

#### QUADRAX PIN CONTACT

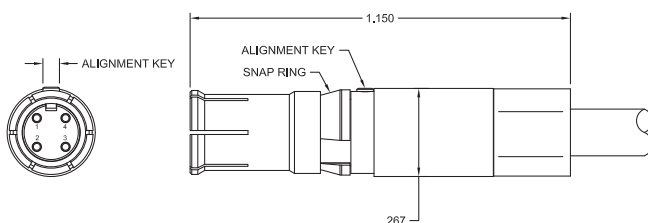
For use in Size 9 Quadrax/Twinax D-Sub Receptacle  
P/N: 012800-30XX and 052700-3XX



PART NUMBER	CABLE TYPE	CABLE
<b>019235-8000</b>	Differential Quadrax	540-1183-000

#### QUADRAX SOCKET CONTACT

For use in Size 9 Quadrax/Twinax D-Sub Plug  
P/N: 012700-20XX and 052800-20XX



PART NUMBER	CABLE TYPE	CABLE
<b>019135-8000</b>	Differential Quadrax	540-1183-000

Notes:

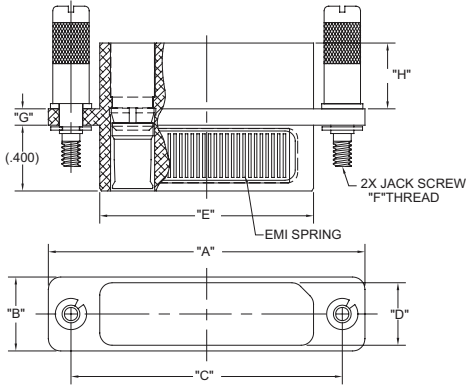
1) Dimensions are in inches

2) All specifications are subject to change without notice

## ► SIZE 9 TWINAX/QUADRAX NON-KEYED D-SUB SHELLS

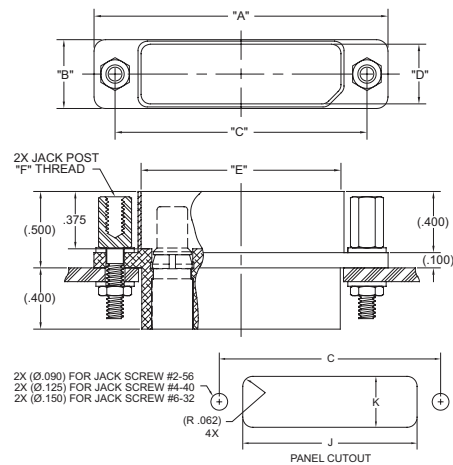
Contacts Are Not Included

### PLUG



PART NUMBER	CONTACTS	A	B	C	D	E	F	G	H
<a href="#">012700-2002</a>	2	1.325	0.450	1.050	0.380	0.700	#2-56	0.100	0.400
<a href="#">012700-2003</a>	4	1.925	0.450	1.650	0.380	1.300	#4-40	0.100	0.400
<a href="#">012700-2058</a>	6	2.525	0.450	2.250	0.380	1.900	#4-40	0.100	0.400
<a href="#">012700-2004</a>	8	2.300	0.750	1.900	0.625	1.450	#4-40	0.100	0.400
<a href="#">012700-2059</a>	10	2.600	0.750	2.200	0.625	1.750	#4-40	0.100	0.400
<a href="#">012700-2060</a>	12	2.900	0.750	2.550	0.625	2.050	#6-32	0.150	0.350
<a href="#">012700-2005</a>	16	3.600	0.750	3.150	0.625	2.650	#6-32	0.150	0.350
<a href="#">012700-2006</a>	21	4.350	0.750	3.900	0.625	3.400	#6-32	0.150	0.350

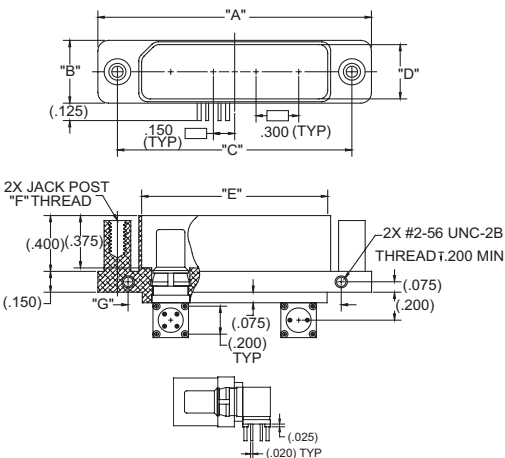
### CABLE MOUNT RECEPTACLE



PART NUMBER	CONTACTS	A	B	C	D	E	F	J	K
<a href="#">012800-3002</a>	2	1.325	0.450	1.050	0.390	0.710	#2-56	0.715	0.415
<a href="#">012800-3003</a>	4	1.925	0.450	1.650	0.390	1.310	#4-40	1.315	0.415
<a href="#">012800-3058</a>	6	2.525	0.450	2.250	0.390	1.910	#4-40	1.915	0.415
<a href="#">012800-3004</a>	8	2.300	0.750	1.900	0.635	1.460	#4-40	1.465	0.415
<a href="#">012800-3059</a>	10	2.600	0.750	2.200	0.635	1.760	#4-40	1.765	0.415
<a href="#">012800-3060</a>	12	2.900	0.750	2.550	0.635	2.060	#6-32	2.065	0.660
<a href="#">012800-3005</a>	16	3.600	0.750	3.150	0.635	2.660	#6-32	2.665	0.660
<a href="#">012800-3006</a>	21	4.350	0.750	3.900	0.635	3.410	#6-32	3.410	0.660

### RIGHT ANGLE PC TAIL MOUNT

Contacts are included



PART NUMBER	CONTACTS	A	B	C	D	E	F	G
<a href="#">012817-1112</a> <i>Twinax</i>	2	1.325	0.450	1.050	0.390	0.710	#2-56	0.900
<a href="#">012817-1113</a> <i>Twinax</i>	4	1.925	0.450	1.650	0.390	1.310	#4-40	1.500
<a href="#">012817-1102</a> <i>Quadax</i>	2	1.325	0.450	1.050	0.390	0.710	#2-56	0.900
<a href="#">012817-1103</a> <i>Quadax</i>	4	1.925	0.450	1.650	0.390	1.310	#4-40	1.500

#### Notes:

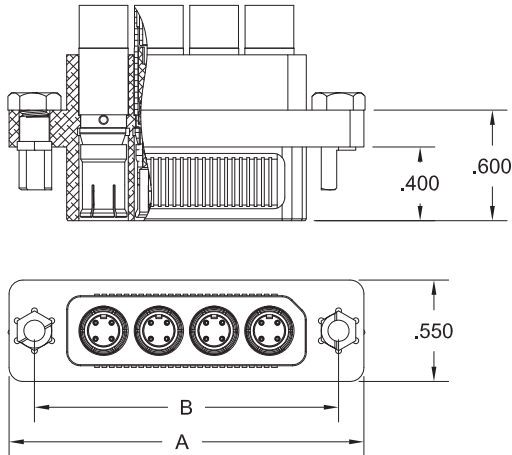
- 1) Dimensions are in inches
- 2) All specifications are subject to change without notice

► **SIZE 9 TWINAX/QUADRAX KEYED D-SUB SHELLS**

Contacts Are Not Included

**PLUG**

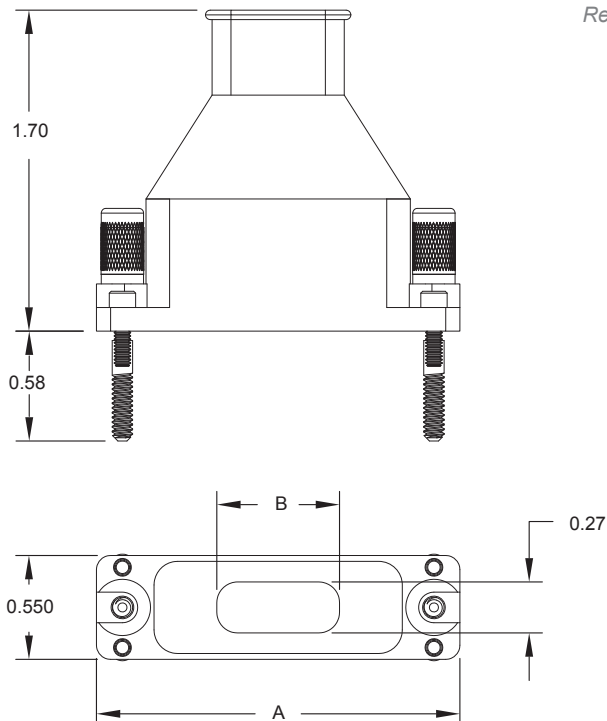
Requires use of keyed backshell



PART NUMBER	CONTACTS	A	B
<b>052800-2002</b>	2	1.325	1.050
<b>052800-2004</b>	4	1.925	1.650
<b>052800-2006</b>	6	2.525	2.250
<b>052800-2008</b>	8	3.125	2.850

**BACKSHELL**

Requires use of keyed plug



PART NUMBER	CONTACTS	A	B
<b>057330-2102</b>	2	1.325	0.325
<b>057330-2104</b>	4	1.925	0.650
<b>057330-2106</b>	6	2.525	0.975
<b>057330-2108</b>	8	3.125	1.300

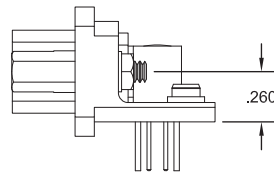
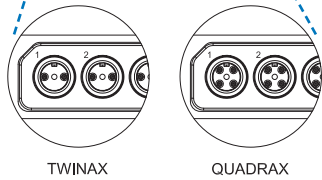
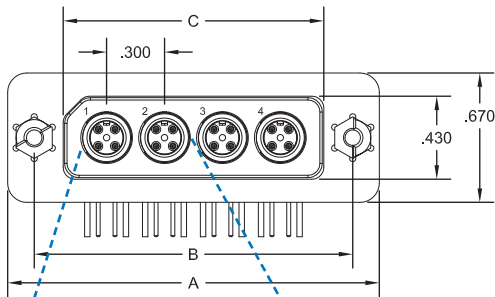
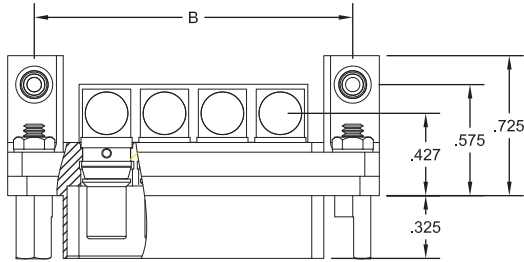
**Notes:**

- 1) Dimensions are in inches
- 2) All specifications are subject to change without notice

## ► SIZE 9 TWINAX/QUADRAX KEYED PCB MOUNT D-SUB SHELLS

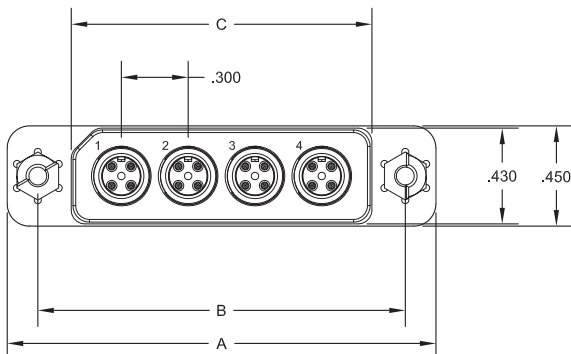
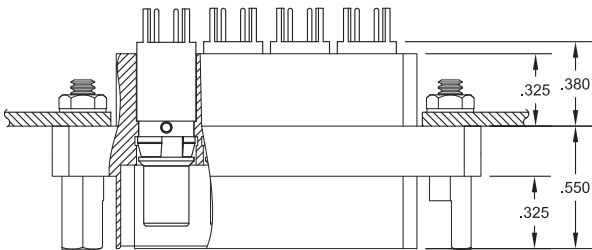
Contacts Are Included

### RIGHT ANGLE RECEPTACLE

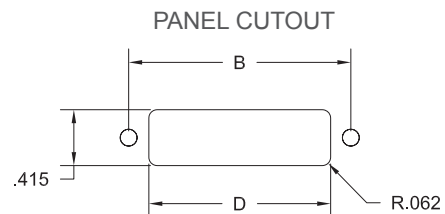


TWINAX	QUADRAX	CONTACTS	A	B	C
052717-1002	052717-1102	2	1.325	1.050	0.750
052717-1004	052717-1104	4	1.925	1.650	1.35
052717-1006	052717-1106	6	2.525	2.250	1.950
052717-1008	052717-1108	8	3.125	2.850	2.550

### STRAIGHT, FRONT PANEL MOUNT RECEPTACLE



TWINAX	QUADRAX	CONTACTS	A	B	C	D
052717-3002	052717-3102	2	1.325	1.050	0.750	0.715
052717-3004	052717-3104	4	1.925	1.650	1.350	1.315
052717-3006	052717-3106	6	2.525	2.250	1.950	1.915
052717-3008	052717-3108	8	3.125	2.850	2.550	2.515



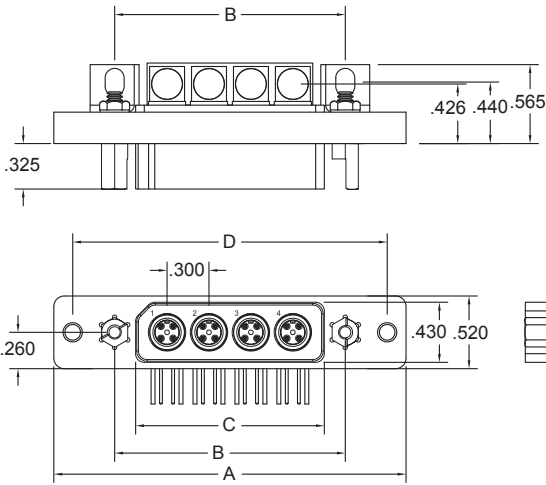
**Notes:**

- 1) Dimensions are in inches
- 2) All specifications are subject to change without notice

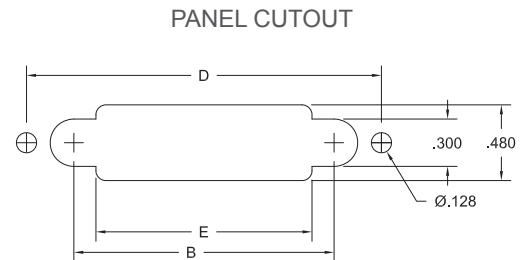
► **SIZE 9 TWINAX/QUADRIX KEYED PCB MOUNT D-SUB SHELLS**

Contacts Are Included

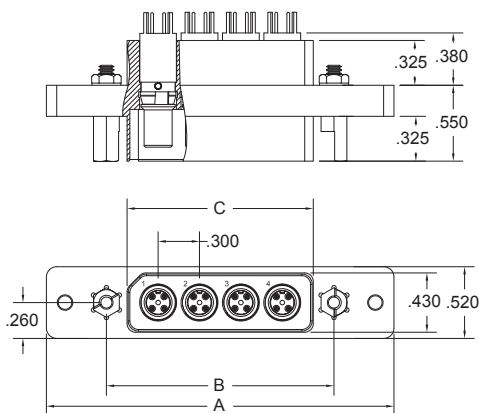
**RIGHT ANGLE, REAR PANEL MOUNT RECEPTACLE**



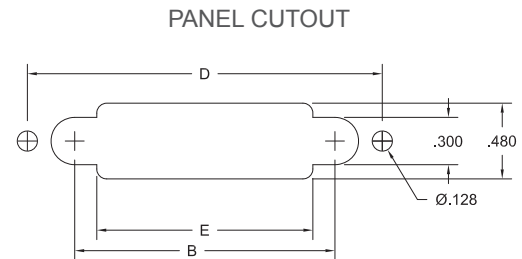
TWINAX	QUADRIX	CONTACTS	A	B	C	D	E
<b>052717-1012</b>	<b>052717-1112</b>	2	1.920	1.050	0.750	1.650	0.770
<b>052717-1014</b>	<b>052717-1114</b>	4	2.520	1.650	1.350	2.250	1.370
<b>052717-1016</b>	<b>052717-1116</b>	6	3.120	2.250	1.950	2.850	1.970
<b>052717-1018</b>	<b>052717-1118</b>	8	3.720	2.850	2.550	3.450	2.570



**STRAIGHT, REAR PANEL MOUNT RECEPTACLE**



TWINAX	QUADRIX	CONTACTS	A	B	C	D	E
<b>052717-3012</b>	<b>052717-3112</b>	2	1.920	1.050	0.750	1.650	0.770
<b>052717-3014</b>	<b>052717-3114</b>	4	2.520	1.650	1.350	2.250	1.370
<b>052717-3016</b>	<b>052717-3116</b>	6	3.120	2.250	1.950	2.850	1.970
<b>052717-3018</b>	<b>052717-3118</b>	8	3.720	2.850	2.550	3.450	2.570



**Notes:**

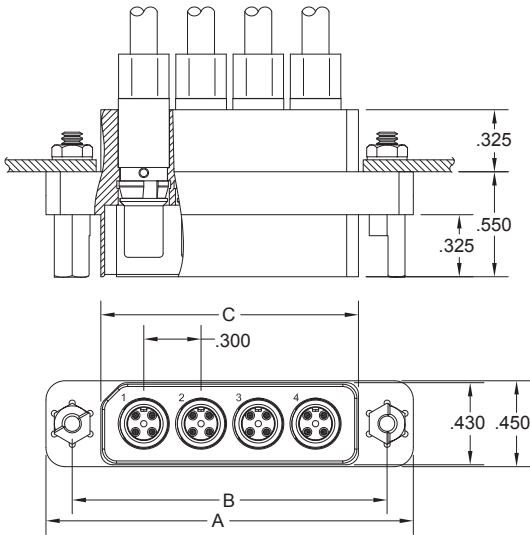
- 1) Dimensions are in inches
- 2) All specifications are subject to change without notice



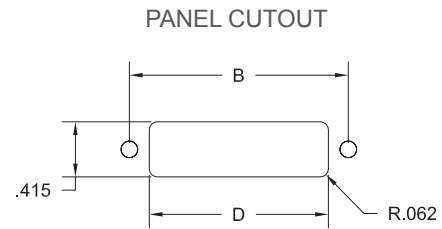
## ► SIZE 9 TWINAX/QUADRAx KEyED CABLE MOUNT D-SUB SHELLS

Contacts Are Not Included

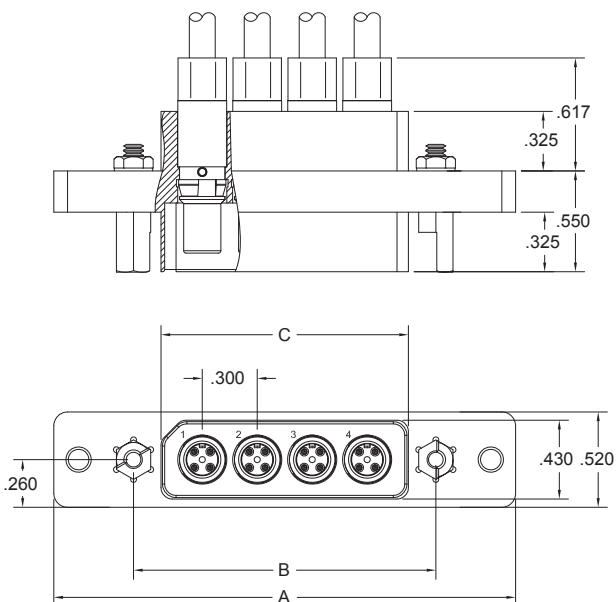
### FRONT PANEL MOUNT RECEPTACLE



PART NUMBER	CONTACTS	A	B	C	D
<b>052700-3002</b>	2	1.325	1.050	0.750	1.650
<b>052700-3004</b>	4	1.925	1.650	1.350	2.250
<b>052700-3006</b>	6	2.525	2.250	1.950	2.850
<b>052700-3008</b>	8	3.125	2.850	2.550	3.450



### REAR PANEL MOUNT RECEPTACLE



PART NUMBER	CONTACTS	A	B	C	D
<b>052700-3012</b>	2	1.920	1.050	0.750	1.650
<b>052700-3014</b>	4	2.520	1.650	1.350	2.250
<b>052700-3016</b>	6	3.120	2.250	1.950	2.850
<b>052700-3018</b>	8	3.720	2.850	2.550	3.450

**Notes:**

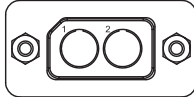
- 1) Dimensions are in inches
- 2) All specifications are subject to change without notice

# INSERT ARRANGEMENTS

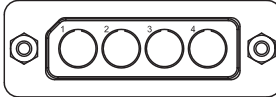
For Keyed & Non-Keyed Shells

## ► SIZE 9 NON-KEYED ARRANGEMENTS

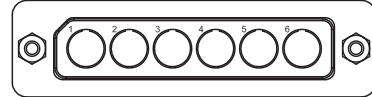
**SHELL SIZE 1  
ARRANGEMENT 1-2**  
2 #9 Quadrax/Twinax Contacts



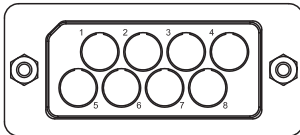
**SHELL SIZE 2  
ARRANGEMENT 2-4**  
4 #9 Quadrax/Twinax Contacts



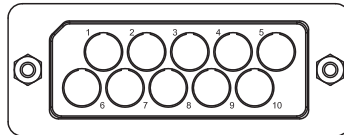
**SHELL SIZE 3  
ARRANGEMENT 3-6**  
6 #9 Quadrax/Twinax Contacts



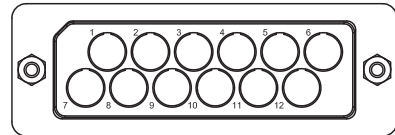
**SHELL SIZE 5  
ARRANGEMENT 5-8**  
8 #9 Quadrax/Twinax Contacts



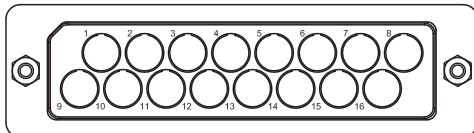
**SHELL SIZE 6  
ARRANGEMENT 6-10**  
10 #9 Quadrax/Twinax Contacts



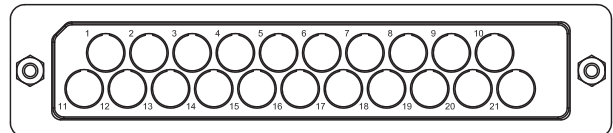
**SHELL SIZE 7  
ARRANGEMENT 7-12**  
12 #9 Quadrax/Twinax Contacts



**SHELL SIZE 8  
ARRANGEMENT 8-16**  
16 #9 Quadrax/Twinax Contacts

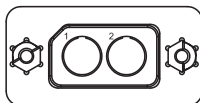


**SHELL SIZE 9  
ARRANGEMENT 9-21**  
21 #9 Quadrax/Twinax Contacts

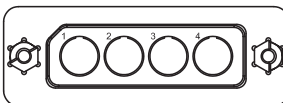


## ► SIZE 9 KEYED ARRANGEMENTS

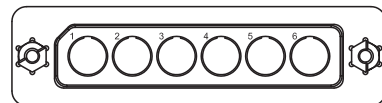
**SHELL SIZE 1  
ARRANGEMENT 1-2**  
2 #9 Quadrax/Twinax Contacts



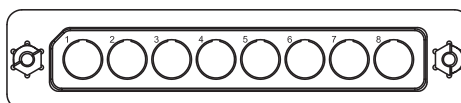
**SHELL SIZE 2  
ARRANGEMENT 2-4**  
4 #9 Quadrax/Twinax Contacts



**SHELL SIZE 3  
ARRANGEMENT 3-6<sup>(2)</sup>**  
6 #9 Quadrax/Twinax Contacts



**SHELL SIZE 4  
ARRANGEMENT 4-8**  
8 #9 Quadrax/Twinax Contacts



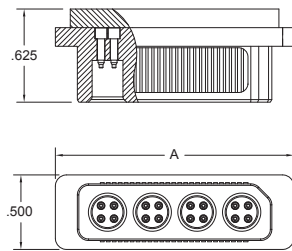
Notes:

- 1) Please consult factory for environmentally sealed and backshell connectors
- 2) Six position keyed jackpost allows 36 possible keying combinations

# TOOLS & ACCESSORIES

## ▶ SOLDERING ALIGNMENT TOOL

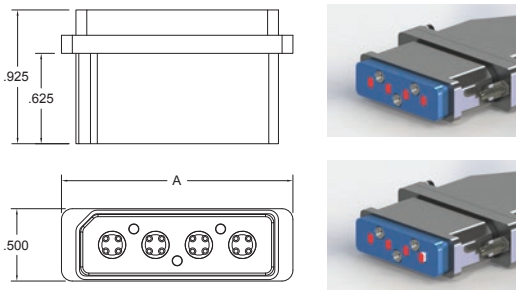
Use to align contacts properly when soldering receptacle with PC tails



PART NUMBER	DESCRIPTION	A
<a href="#">ST-1031</a>	2 Channel Quadrx Alignment Tool	1.000
<a href="#">ST-1032</a>	2 Channel Twinax Alignment Tool	1.000
<a href="#">ST-1033</a>	4 Channel Quadrx Alignment Tool	1.600
<a href="#">ST-1034</a>	4 Channel Twinax Alignment Tool	1.600
<a href="#">ST-1035</a>	6 Channel Quadrx Alignment Tool	2.200
<a href="#">ST-1036</a>	6 Channel Twinax Alignment Tool	2.200
<a href="#">ST-1037</a>	8 Channel Quadrx Alignment Tool	2.800
<a href="#">ST-1038</a>	8 Channel Twinax Alignment Tool	2.800

## ▶ PLUG INSPECTION TOOL

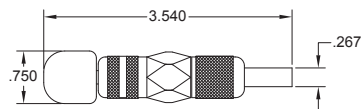
Use to inspect the completed plug assembly to ensure all pins are correctly aligned



PART NUMBER	DESCRIPTION	A
<a href="#">ST-2031</a>	2 Channel Quadrx Inspection Tool	1.000
<a href="#">ST-2032</a>	2 Channel Twinax Inspection Tool	1.000
<a href="#">ST-2033</a>	4 Channel Quadrx Inspection Tool	1.600
<a href="#">ST-2034</a>	4 Channel Twinax Inspection Tool	1.600
<a href="#">ST-2035</a>	6 Channel Quadrx Inspection Tool	2.200
<a href="#">ST-2036</a>	6 Channel Twinax Inspection Tool	2.200
<a href="#">ST-2037</a>	8 Channel Quadrx Inspection Tool	2.800
<a href="#">ST-2038</a>	8 Channel Twinax Inspection Tool	2.800

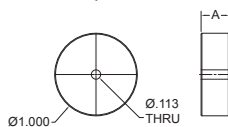
## ▶ INSERT REMOVAL TOOL

Part Number: SIR-027 | Use to remove size 9 pin and socket contacts from the plug or receptacle bodies



## ▶ CABLE STRIPPING GAGE

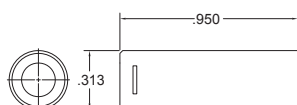
Use to trim and strip the Quadrx and Twinax cables to the proper length<sup>(1)</sup>



PART NUMBER	DESCRIPTION	A
<a href="#">T-2177-1</a>	Dielectric Cable Stripping Gage	0.175
<a href="#">T-2177-2</a>	Wire Cable Stripping Gage	0.340

## ▶ INSERT REMOVAL TOOL

Part Number: T-2172 | Use to verify the proper trim length and consistency during assembly<sup>(1)</sup>



**Notes:**

1) Consult factory for Assembly Instructions AI-5001/5002

# HOW TO ORDER

For custom products only. Standard part numbers are listed throughout the brochure.



## 1 ▸ PREFIX

**RDC9** RUGGED D-SUB SZ 9

## 2 ▸ SHELL

**RN** RECEPTACLE, NON-KEYED

**PK** PLUG, KEYED

**RK** RECEPTACLE, KEYED

**PN** PLUG, NON-KEYED

## 3 ▸ INSERT ARRANGEMENT

**2, 4, 6, 8, 10, 12, 16**, OR **21** WAY

## 4 ▸ PLATING

**C** CADMIUM (YELLOW CHROMATE)

**N** ELECTROLESS NICKEL

## 5 ▸ CONTACT TYPE

**P** PIN

**S** SOCKET

## 6 ▸ CONTACT TERMINATION

**C** CRIMP

**S** STRAIGHT PC TAIL

**RA** RIGHT ANGLE PC TAIL

## 7 ▸ CONTACT

**T** TWINAX

**Q** QUADRAX

## 8 ▸ CABLE GROUP

**2** 540-1086-000

**3 6** 540-1183-000

**3** 540-1161-000

**0** NO CABLE REQUIRED

**3 4** 540-1167-000