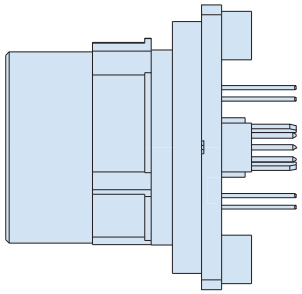
# SuperNine® Series IV Environmental

## MIL-DTL-38999 Series IV Type
## 234-218 High-speed panel mount receptacles, PC tail





### "BETTER-THAN-QPL" FEATURES AND BENEFITS

- Secure breech-lock mating connector meets D38999 shock and vibe
- Glenair Signature Tin Zinc finish class is RoHS compliant and cadmium compatible
- Precision-machined key/keyway polarization for reliable mismating protection
- Scoop-proof design prevents pin damage and short circuits
- Fully tooled for all MIL-STD-1560 insert arrangements
- Contact options include size #22D, #20, #16, and #12 (see High-Speed series for Size #8)
- 500 mating cycles exceeds MIL-DTL-38999 specification

**HOW TO ORDER**

| Sample Part Number | 234-218 | -00 | NF | 17 | E | - | 2 | P | N | -909CP |
|---|---|---|---|---|---|---|---|---|---|---|
| **Basic Part Number** | **234-218** | | | | | | | | | |
| **Connector Style** | **00** = Receptacle, wall-mount through holes<br>**HM** = Receptacle, wall-mount w/metric helicoil<br>**HS** = Receptacle, wall-mount w/standard helicoil<br>**CM** = Receptacle, wall-mount with metric clinch nut<br>**CS** = Receptacle, wall-mount with standard clinch nut | | | | | | | | | |
| **Material/ Finish** | (See Table I) | | | | | | | | | |
| **Shell Size** | **11**, **13**, **15**, **17**, **19**, **21**, **23**, **25** | | | | | | | | | |
| **Contact Type** | (See Table II) | | | | | | | | | |
| **Ground Option** | G = Common Ground<br>**-** = None | | | | | | | | | |
| **Insert Arrangement** | PER MIL-STD-1560 | | | | | | | | | |
| **Insert Designator** | **P** = Pin Contacts<br>**S** = Socket Contact | | | | | | | | | |
| **Alternate Key Positions** | **A**, **B**, **C**, **D**, **K**, **L**, **M**, **R**, **N** = Normal, **U** = Universal (Glenair equivalent only) | | | | | | | | | |
| **Optional Mod Code** | **909**** = Supplies connector with contacts<br>**1213** = Supplies connector with contacts per MIL-STD-1560 | | | | | | | | | |

**TABLE I - MATERIAL/FINISH**

| Equiv Class | Sym | Material | Finish |
|---|---|---|---|
| W | **NF** | Aluminum Alloy | Cad/O.D. over Electroless Nickel |
| G* | **MA**** | | Electroless Nickel, Matte |
| T* | **MT** | | Nickel-PTFE |
| F | **ME** | | Electroless Nickel |
| AA | **MN** | | MegaNickel |
| V | **TZ** | | Tin-Zinc |
| Z* | **ZR** | | Zinc Ni, Black (Tri-Valent CR) |
| K* | **Z1** | Stainless Steel | Passivate |
| L* | **ZL** | | Electrodeposited Nickel |

* = Glenair Equivalent Only

** = Connectors for space applications must be ordered with "MA" finish and mod code "-186T" to conform to the thermal vacuum outgassing requirements of class G.

**TABLE II - CONTACT STYLE**

| Sym | Description |
|---|---|
| **C** | Coax, 50 Ohm |
| **C1** | Coax, 75 Ohm |
| **D** | Differential Twinax |
| **E*** | El Ochito |
| **P** | Power |
| **Q** | Quadrax |
| **T** | Triax/Concentric Twinax |
| **OMIT** | Per Mil-Std-1560 |

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**TABLE III - OCHITO POSITIONS**
**B = BLUE, R = RED, W = WHITE**

| SYM | Contact 1 | Contact 2 | Contact 3 | Contact 4 | Contact 5 | Contact 6 | Contact 7 | Contact 8 |
|---|---|---|---|---|---|---|---|---|
| E | W | W | W | W | W | W | W | W |
| E2 | B | W | W | W | W | W | W | W |
| E3 | R | W | W | W | W | W | W | W |
| E4 | B | B | W | W | W | W | W | W |
| E5 | R | B | W | W | W | W | W | W |
| E6 | R | R | W | W | W | W | W | W |
| E7 | B | B | B | W | W | W | W | W |
| E8 | R | B | B | W | W | W | W | W |
| E9 | R | R | B | W | W | W | W | W |
| E10 | R | R | R | W | W | W | W | W |
| E11 | B | B | B | B | W | W | W | W |
| E12 | R | B | B | B | W | W | W | W |
| E13 | R | R | B | B | W | W | W | W |
| E14 | R | R | R | B | W | W | W | W |
| E15 | R | R | R | R | W | W | W | W |
| E16 | B | B | B | B | B | W | W | W |
| E17 | R | B | B | B | B | W | W | W |
| E18 | R | R | B | B | B | W | W | W |
| E19 | R | R | R | B | B | W | W | W |
| E20 | R | R | R | R | B | W | W | W |
| E21 | R | R | R | R | R | W | W | W |
| E22 | B | B | B | B | B | B | W | W |
| E23 | R | B | B | B | B | B | W | W |
| E24 | R | R | B | B | B | B | W | W |
| E25 | R | R | R | B | B | B | W | W |
| E26 | R | R | R | R | B | B | W | W |
| E27 | R | R | R | R | R | B | W | W |
| E28 | R | R | R | R | R | R | W | W |
| E29 | B | B | B | B | B | B | B | W |
| E30 | R | B | B | B | B | B | B | W |
| E31 | R | R | B | B | B | B | B | W |
| E32 | R | R | R | B | B | B | B | W |
| E33 | R | R | R | R | B | B | B | W |
| E34 | R | R | R | R | R | B | B | W |
| E35 | R | R | R | R | R | R | B | W |
| E36 | R | R | R | R | R | R | R | W |
| E37 | B | B | B | B | B | B | B | B |
| E38 | R | B | B | B | B | B | B | B |
| E39 | R | R | B | B | B | B | B | B |
| E40 | R | R | R | B | B | B | B | B |
| E41 | R | R | R | R | B | B | B | B |
| E42 | R | R | R | R | R | B | B | B |
| E43 | R | R | R | R | R | R | B | B |
| E44 | R | R | R | R | R | R | R | B |
| E45 | R | R | R | R | R | R | R | R |

**TABLE IV - EL OCHITO MATING CONTACT**

| Mating Part Number | | Protocols |
|---|---|---|
| WHITE-PIN | 858-003 | Use for gb ethernet and 10gb ethernet protocols |
| WHITE-SKT | 858-004 | Use for gb ethernet and 10gb ethernet protocols |
| BLUE-PIN | 858-028 | Use for USB 3.0 (90 Ohm) |
| BLUE-SKT | 858-029 | Use for USB 3.0 (90 Ohm) |
| RED-PIN | 858-030 | Use for all high-bandwidth 100 ohm differential lines |
| RED-SKT | 858-031 | Use for all high-bandwidth 100 ohm differential lines |

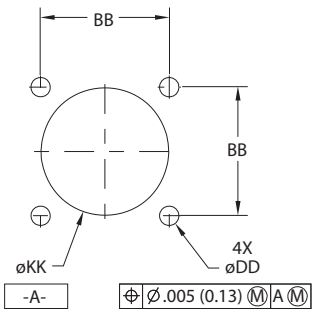
**TABLE V - POLARIZING POSITIONS**

| | N | A | B | C | D | K | L | M | R | U |
|---|---|---|---|---|---|---|---|---|---|---|
| X | 110° | 100° | 90° | 80° | 70° | 120° | 120° | 120° | 120° | N/A |
| Y | 250° | 260° | 270° | 280° | 290° | 255° | 265° | 275° | 285° | N/A |

**TABLE VI**

| Contact Size | Pc Tail ØM |
|---|---|
| #23 | .020 (0.51)<br>.018 (0.46) |
| #22 | .020 (0.51)<br>.018 (0.46) |
| #20 | .030 (0.76)<br>.028 (0.71) |
| #16 | .040 (1.02)<br>.038 (0.97) |
| #12 | .072 (1.83)<br>.070 (1.78) |

**TABLE VII - PANEL CUTOUT**

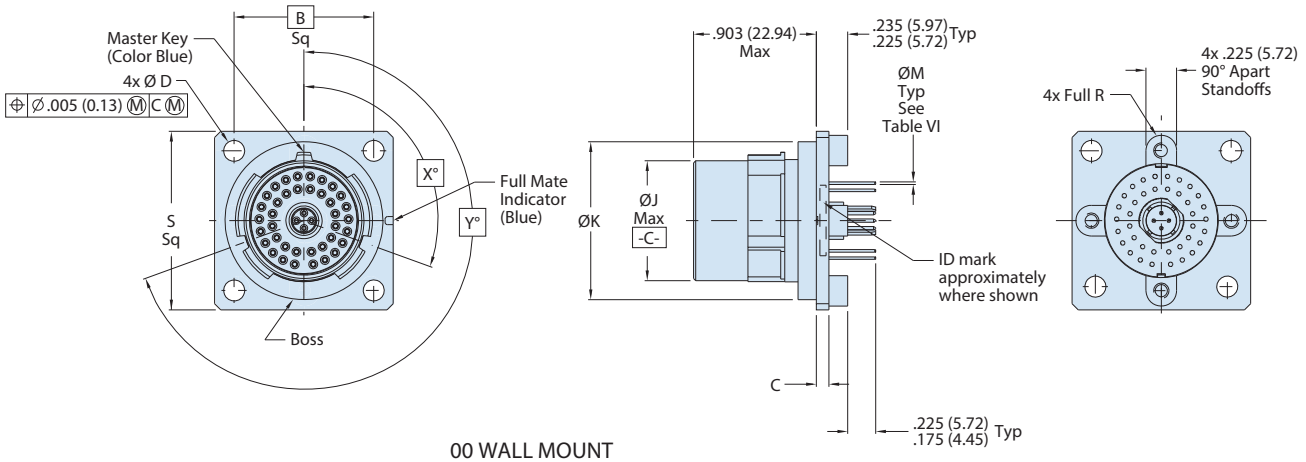



| Shell Size | Shell Size Code | ØKK Min | BB Bsc | ØDD |
|---|---|---|---|---|
| 11 | B | 0.796 (20.22) | 0.812 (20.62) | .133 (3.38)/.123 (3.12) |
| 13 | C | 0.922 (23.42) | 0.906 (23.01) | |
| 15 | D | 1.047 (26.59) | 0.969 (24.61) | |
| 17 | E | 1.219 (30.96) | 1.062 (26.97) | |
| 19 | F | 1.297 (32.94) | 1.156 (29.36) | |
| 21 | G | 1.422 (36.12) | 1.250 (31.75) | |
| 23 | H | 1.547 (39.29) | 1.375 (34.93) | .159 (4.04)/.149 (3.78) |
| 25 | J | 1.672 (42.47) | 1.500 (38.10) | .155 (3.94)/.145 (3.68) |

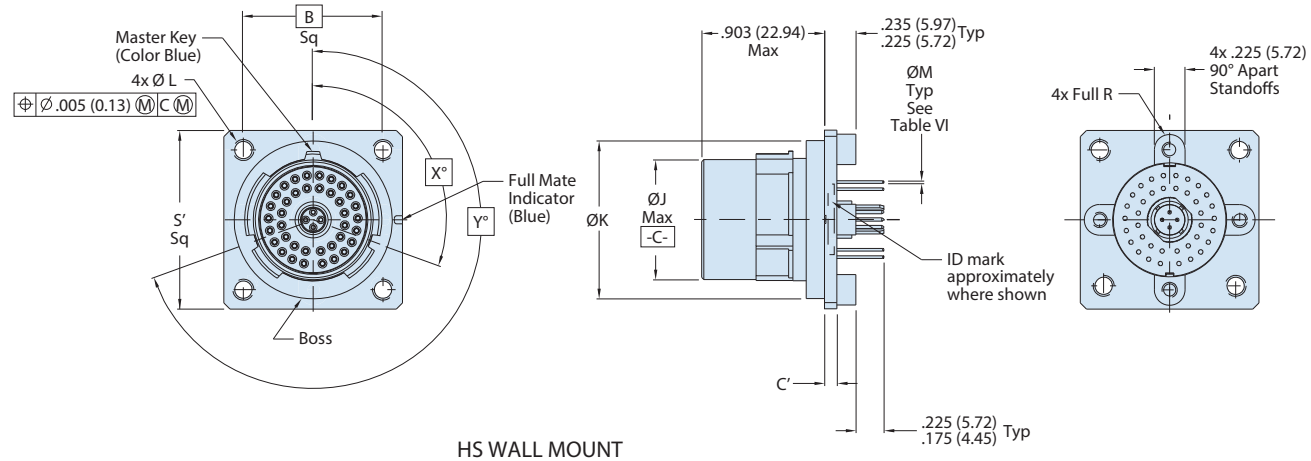
# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail



**WALL MOUNT RECEPTACLE 234-218 REF: MIL-DTL-38999/40**




00 WALL MOUNT
THRU HOLE




HS WALL MOUNT
STANDARD HELICOIL

| Shell Size | Shell Size Code | B Bsc | C | C' | Ø D | Ø J Max | Ø K | L Thread | L' Thread | S | S' | Ø T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | B | .812 (20.62) | .102 (2.6) .083 (2.1) | .179 (4.5) .140 (3.6) | .138 (3.5) .122 (3.1) | .509 (12.93) | .793 (20.15) .778 (19.76) | .112-40 UNC | M3 X 0.5 | 1.051 (26.7) 1.008 (25.6) | 1.202 (30.5) 1.162 (29.5) | .585 (14.9) |
| 13 | C | .906 (23.02) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .634 (16.10) | .913 (23.35) .904 (22.96) | | | 1.146 (29.1) 1.102 (28.0) | 1.296 (32.8) 1.256 (31.9) | .704 (17.9) |
| 15 | D | .969 (24.61) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .759 (19.28) | 1.044 (26.52) 1.029 (26.13) | | | 1.240 (31.5) 1.197 (30.4) | 1.359 (34.5) 1.319 (33.5) | .861 (21.9) |
| 17 | E | 1.062 (26.98) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .885 (22.48) | 1.170 (29.72) 1.155 (29.33) | | | 1.335 (33.9) 1.291 (32.8) | 1.452 (36.9) 1.412 (35.9) | .980 (24.9) |
| 19 | F | 1.156 (29.36) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | 1.009 (25.63) | 1.294 (32.87) 1.279 (32.48) | | | 1.461 (37.1) 1.417 (36.0) | 1.546 (39.3) 1.506 (38.3) | 1.097 (27.9) |
| 21 | G | 1.250 (31.76) | .134 (3.4) .114 (2.9) | | .138 (3.5) .122 (3.1) | 1.134 (28.80) | 1.419 (36.05) 1.404 (35.66) | | | 1.583 (40.2) 1.539 (39.1) | 1.640 (41.7) 1.600 (40.6) | 1.215 (30.9) |
| 23 | H | 1.375 (34.93) | .134 (3.4) .114 (2.9) | .190 (4.8) .170 (4.3) | .157 (4.0) .142 (3.6) | 1.259 (31.98) | 1.544 (39.22) 1.529 (38.83) | .138-32 UNC | M4 X 0.7 | 1.709 (43.4) 1.665 (42.3) | 1.765 (44.8) 1.725 (43.8) | 1.332 (33.8) |
| 25 | J | 1.500 (38.10) | .134 (3.4) .114 (2.9) | | .157 (4.0) .142 (3.6) | 1.384 (35.15) | 1.669 (42.40) 1.654 (42.01) | | | 1.835 (46.6) 1.791 (45.5) | 1.890 (48.0) 1.850 (47.0) | 1.451 (36.9) |

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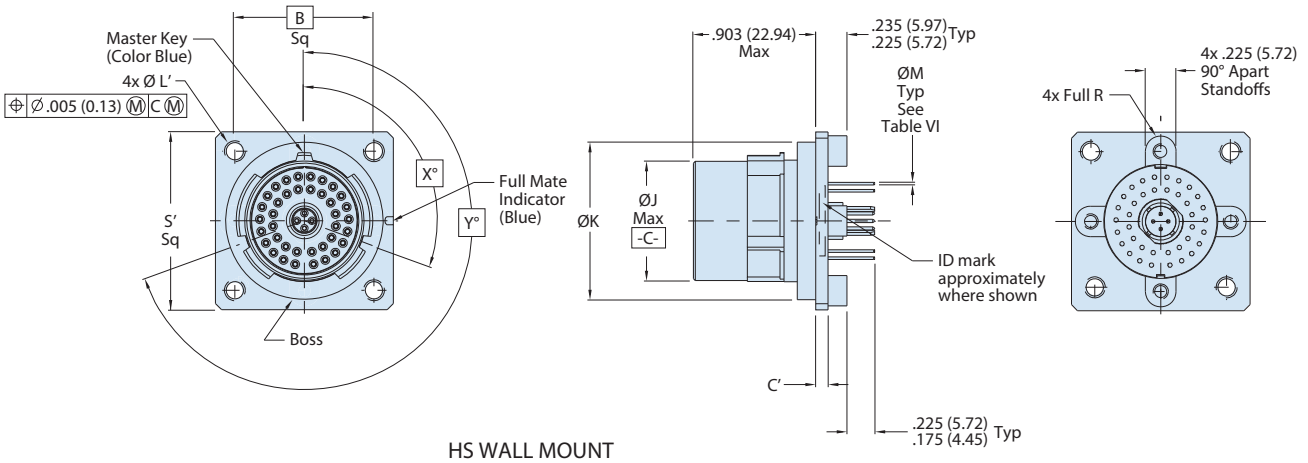
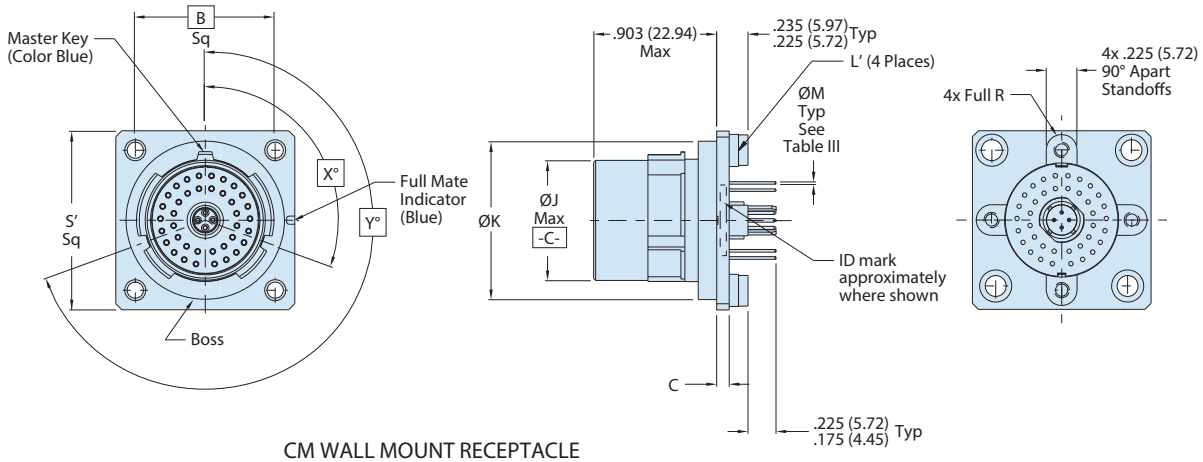
# 234-218 High-speed panel mount receptacles, PC tail



**WALL MOUNT RECEPTACLE 234-218 REF: MIL-DTL-38999/40**




HS WALL MOUNT
METRIC HELICOIL




CM WALL MOUNT RECEPTACLE
WITH METRIC CLINCH NUTS
Consult manufacturer

| Shell Size | Shell Size Code | B Bsc | C | C' | Ø D | Ø J Max | Ø K | L Thread | L' Thread | S | S' | Ø T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 11 | B | .812 (20.62) | .102 (2.6) .083 (2.1) | .179 (4.5) .140 (3.6) | .138 (3.5) .122 (3.1) | .509 (12.93) | .793 (20.15) .778 (19.76) | .112-40 UNC | M3 X 0.5 | 1.051 (26.7) 1.008 (25.6) | 1.202 (30.5) 1.162 (29.5) | .585 (14.9) |
| 13 | C | .906 (23.02) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .634 (16.10) | .913 (23.35) .904 (22.96) | | | 1.146 (29.1) 1.102 (28.0) | 1.296 (32.8) 1.256 (31.9) | .704 (17.9) |
| 15 | D | .969 (24.61) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .759 (19.28) | 1.044 (26.52) 1.029 (26.13) | | | 1.240 (31.5) 1.197 (30.4) | 1.359 (34.5) 1.319 (33.5) | .861 (21.9) |
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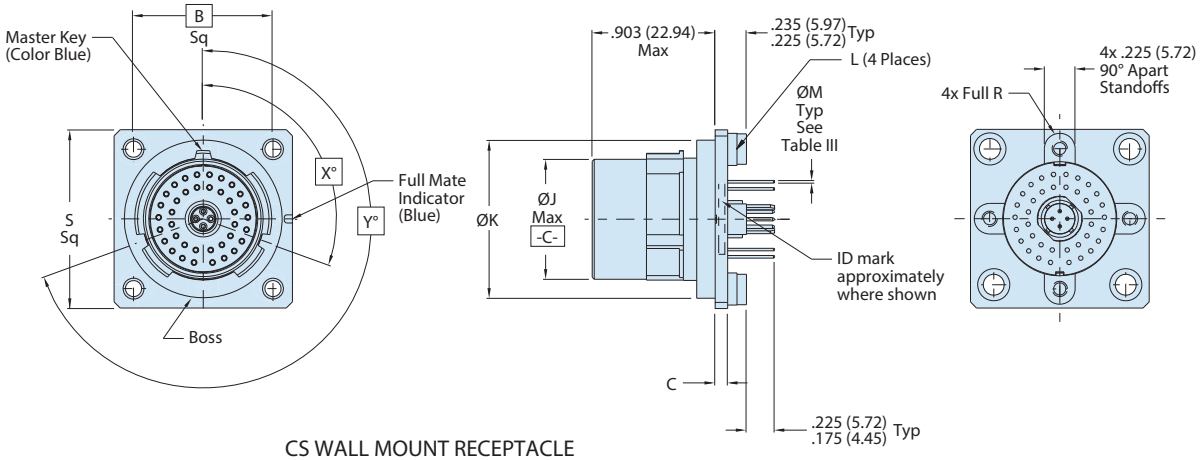
| 19 | F | 1.156 (29.36) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | 1.009 (25.63) | 1.294 (32.87) 1.279 (32.48) | | | 1.461 (37.1) 1.417 (36.0) | 1.546 (39.3) 1.506 (38.3) | 1.097 (27.9) |
| 21 | G | 1.250 (31.76) | .134 (3.4) .114 (2.9) | | .138 (3.5) .122 (3.1) | 1.134 (28.80) | 1.419 (36.05) 1.404 (35.66) | | | 1.583 (40.2) 1.539 (39.1) | 1.640 (41.7) 1.600 (40.6) | 1.215 (30.9) |
| 23 | H | 1.375 (34.93) | .134 (3.4) .114 (2.9) | .190 (4.8) .170 (4.3) | .157 (4.0) .142 (3.6) | 1.259 (31.98) | 1.544 (39.22) 1.529 (38.83) | .138-32 UNC | M4 X 0.7 | 1.709 (43.4) 1.665 (42.3) | 1.765 (44.8) 1.725 (43.8) | 1.332 (33.8) |
| 25 | J | 1.500 (38.10) | .134 (3.4) .114 (2.9) | | .157 (4.0) .142 (3.6) | 1.384 (35.15) | 1.669 (42.40) 1.654 (42.01) | | | 1.835 (46.6) 1.791 (45.5) | 1.890 (48.0) 1.850 (47.0) | 1.451 (36.9) |

# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail



**WALL MOUNT RECEPTACLE 234-218 REF: MIL-DTL-38999/40**




CS WALL MOUNT RECEPTACLE
WITH STANDARD CLINCH NUTS
Consult manufacturer

| Shell Size | Shell Size Code | B Bsc | C | C′ | Ø D | Ø J Max | Ø K | L Thread | L′ Thread | S | S′ | Ø T |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
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| 17 | E | 1.062 (26.98) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | .885 (22.48) | 1.170 (29.72) 1.155 (29.33) | | | 1.335 (33.9) 1.291 (32.8) | 1.452 (36.9) 1.412 (35.9) | .980 (24.9) |
| 19 | F | 1.156 (29.36) | .102 (2.6) .083 (2.1) | | .138 (3.5) .122 (3.1) | 1.009 (25.63) | 1.294 (32.87) 1.279 (32.48) | | | 1.461 (37.1) 1.417 (36.0) | 1.546 (39.3) 1.506 (38.3) | 1.097 (27.9) |
| 21 | G | 1.250 (31.76) | .134 (3.4) .114 (2.9) | | .138 (3.5) .122 (3.1) | 1.134 (28.80) | 1.419 (36.05) 1.404 (35.66) | | | 1.583 (40.2) 1.539 (39.1) | 1.640 (41.7) 1.600 (40.6) | 1.215 (30.9) |
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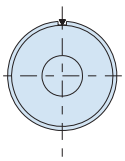
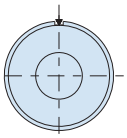
# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail insert arrangements



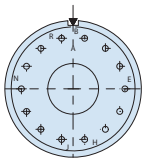
## FIGURE 1 - INSERT ARRANGEMENTS



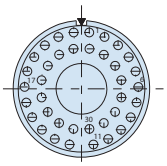
Arrangement 9XG5
(Available only with ground plane option)



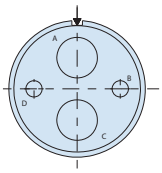
Arrangement 11x-1
1x Size 8



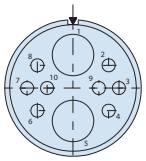
Arrangement 13x-14
1x Size 8
14x Size 23



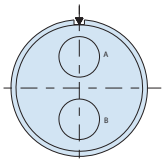
Arrangement 17x-2
1x Size 8
38x Size 22



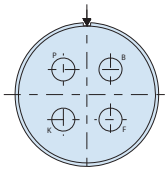
Arrangement 17x-22
(IAW prEN 3645-001)
2x Size 8
2x Size 12



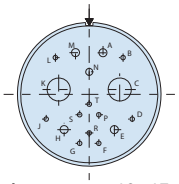
Arrangement 17x-60
2x Size 8
8x Size 22



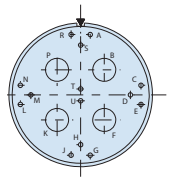
Arrangement 17x-75
(IAW prEN 3645-001)
2x Size 8



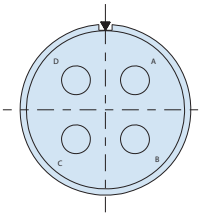
Arrangement 19x-4
4x Size 8



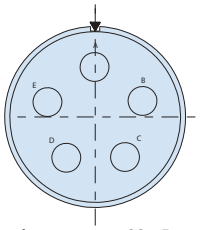
Arrangement 19x-17
10x Size 22d
1x Size 20
4x Size 16
2x Size 8



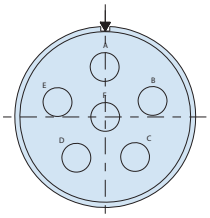
Arrangement 19x-18
14x Size 22d
4x Size 8



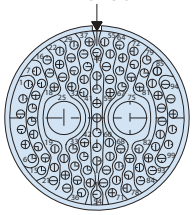
Arrangement 21x-75
4x Size 8



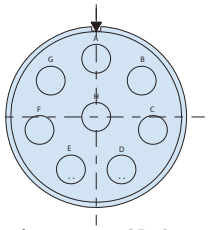
Arrangement 23x-5
(IAW prEN 3645-001)



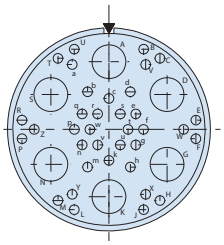
Arrangement 23x-6
(IAW prEN 3645-001)
5x Size 8



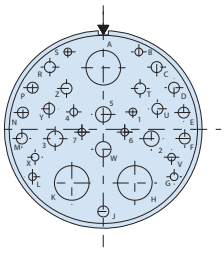
Arrangement 25x-7
97x Size 22
2x Size 8
6x Size 8



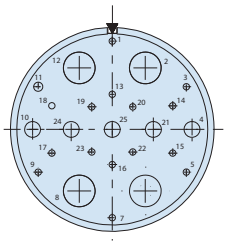
Arrangement 25x-8
8x Size 8



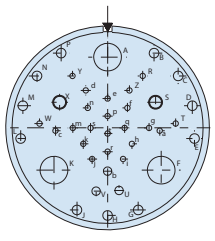
Arrangement 25x-17
36x Size 22



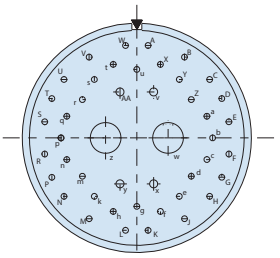
Arrangement 25x-20
(IAW prEN 3645-001)
10x Size 20
13x Size 16
4x Size 12
3x Size 8



Arrangement 25x-26
(IAW prEN 3645-001)
16x Size 20, 5x Size 12
4x Size 8



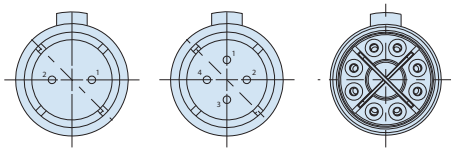
Arrangement 25x-41
22x Size 22d, 3x Size 20
11x Size 16, 2x Size 12
3x Size 8



Arrangement 25x-46
40x Size 20
4x Size 16
2x Size 8

Figure 1
Insert arrangements, mating face of pin insert shown.
Replace X with C, D, E, Q or T
(See Table VI)

## FIGURE 2 - CONTACT INNER PIN ORIENTATION



Diferental Twinax

Quadrax

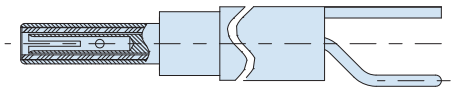
El Ochito

# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options

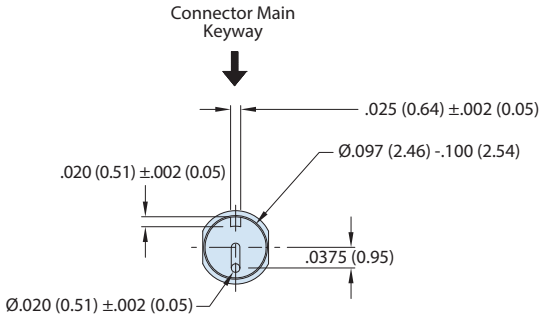


## COAX CONTACTS

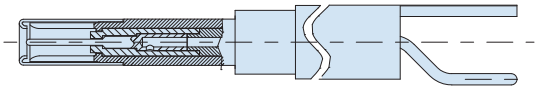
COAX CONTACTS



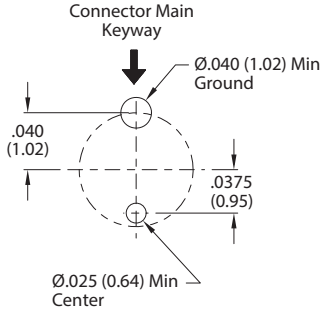
Size #16 Coax Contact, Pin, PC Tail Detail
Interface per M39029/76
Note: Max usable frequency of 700 Mhz




Contact rear view
and interface requirements



Size #16 Coax Contact, Socket, PC Tail Detail
Interface per M39029/77
Note: Max usable frequency of 700 Mhz




Recommended PCB Footprint

## NOTES

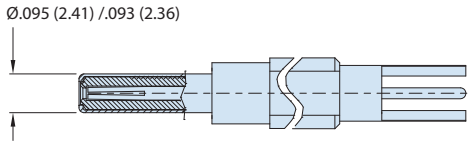
1. Material/Finish
   - Shell - See Table I
   - Contacts - Copper Alloy / Gold Plated
   - Insulators - High Grade Rigid Dielectric. for common ground option - Al Alloy/ Mfg Option
   - Seals - Fluorosilicone Blend.
   - Potting - Epoxy.
2. Glenair's 234-218 receptacle connector is designed to meet or exceed the applicable mechanical, dimensional, electrical, and environmental requirements of MIL-DTL-38999, D38999/20, and MIL-STD-1560 except as shown and/or noted. Receptacle mates with any QPL manufacturer's MIL-DTL-38999, Series III plug connector, D38999/26, having the same shell size, insert arrangement, polarization and mating contact.
3. Glenair's 233-218 receptacle connector should be mated to Glenair's 233-217 plug with appropriate contacts to optimize performance.
4. Insert arrangement is in accordance with MIL-STD-1560 and figure 1. Contact manufacturer for additional arrangement options.
5. Insert arrangement is shown for reference only. Pin interface shown.
6. See figure 2 for reference orientation of the inner pins relative to connector main keyway.
7. Ground plane option only available for insert arrangements where all contacts are shielded type.
8. Coax contact mating interfaces shall be in accordance with the following:
   - Size #16 Per M39029/76 & /77
   - Size #12 Per M39029/102 & 103
   - Size #8, 50 Ohm Per M39029/59 & 60
   - Size #8, 75 Ohm Per 852-056 & -057
9. El Ochito mating contact shall be in accordance with Table III. El Ochito color type configuration positon shall be per Table III.
10. For optimal performance, see Glenair application note AN0002.

# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options

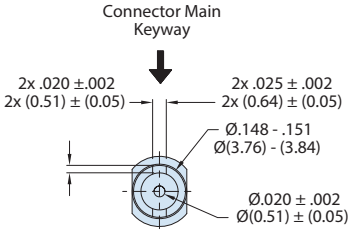


## COAX CONTACTS

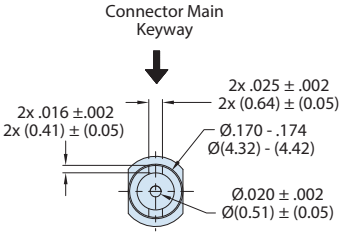
### COAX CONTACTS



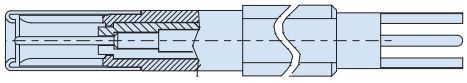

Size #12 Coax Contact Pin, PC Tail Detail
Interface per M39029/102



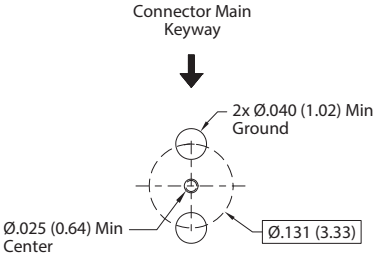

50 Ohm contact rear view
and interface requirements



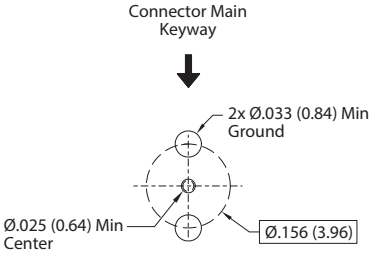

75 Ohm contact rear view
and interface requirements



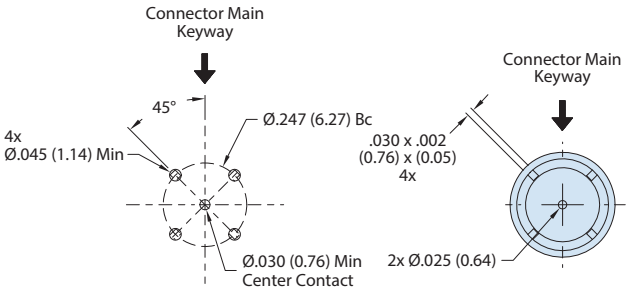
Size #12 Coax Contact Socket, PC Tail Detail
Interface per M39029/103




50 Ohm Contact
Recommended PCB Footprint



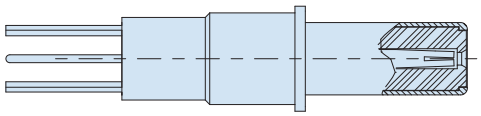

75 Ohm Contact
Recommended PCB Footprint



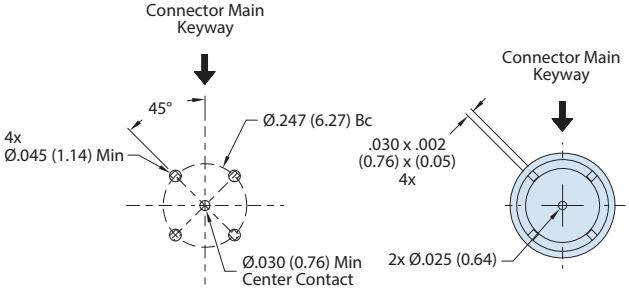

Recommended
Co-ax PCB Layout




Rear View



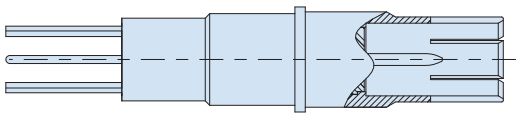
SIZE #8 CO-AX PIN, PC TAIL DETAIL
C = Interface Per M39029/60 (50 Ohm)
C1 = Interface Per 852-056 (75 Ohm)




Recommended
Co-ax PCB Layout




Rear View



SIZE #8 CO-AX SOCKET, PC TAIL DETAIL
C = Interface Per M39029/59 (50 Ohm)
C1 = Interface Per 852-057 (75 Ohm)



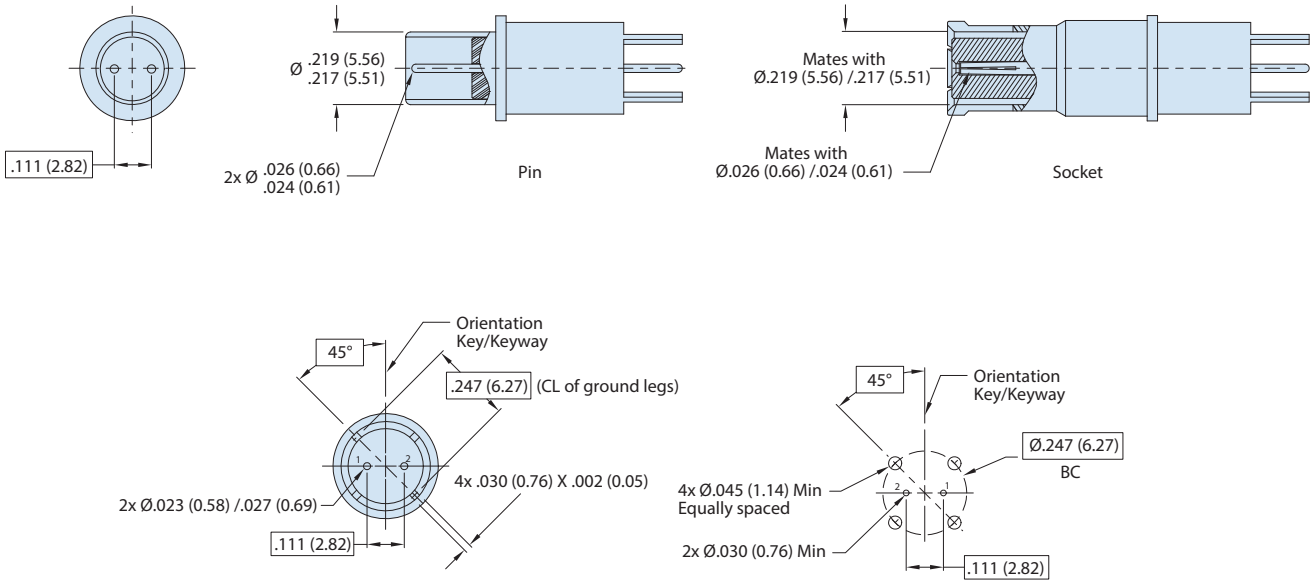
Dimensions in Inches (millimeters) are subject to change without notice.

# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options



**TWINAX CONTACTS**

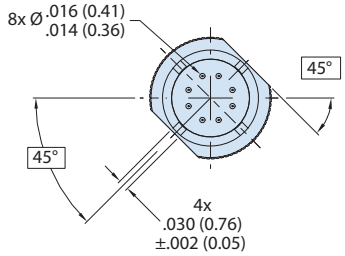
DIFFERENTIAL TWINAX CONTACT DETAILS

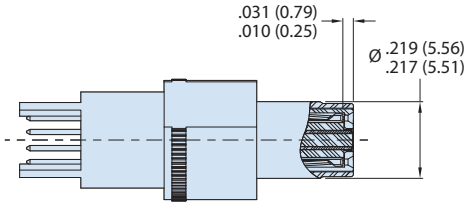


# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options

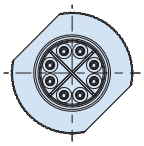


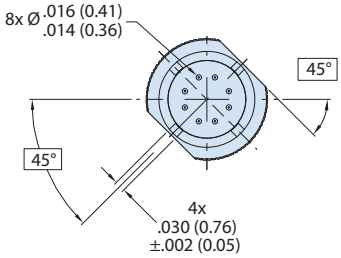
## EL OCHITO CONTACTS

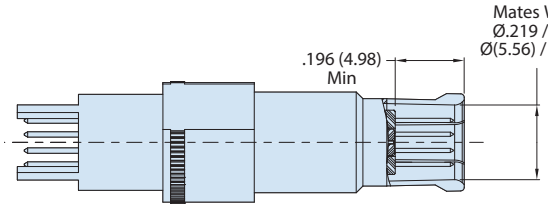


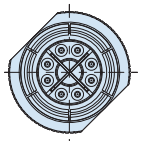

Size #8 El Ochito Pin, Pc Tail Detail
White Insert - For Ethernet Applications

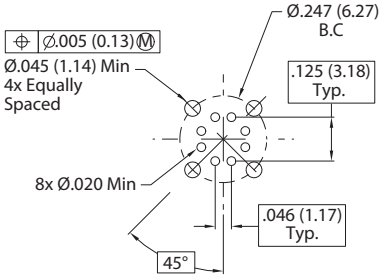




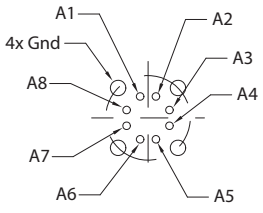




Size #8 El Ochito Socket, PC Tail Detail
White Insert - For Ethernet Applications

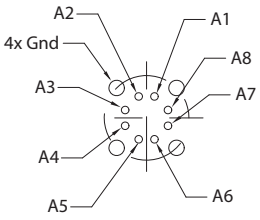





Recommended PC Board Layout
(See Detail A for pin assignment)
For optimal performance, see
Glenair application note AN0002




PC Tail Pin Assignment
(For Ochito Pin Contact)




PC Tail Pin Assignment
(For Ochito Skt Contact)

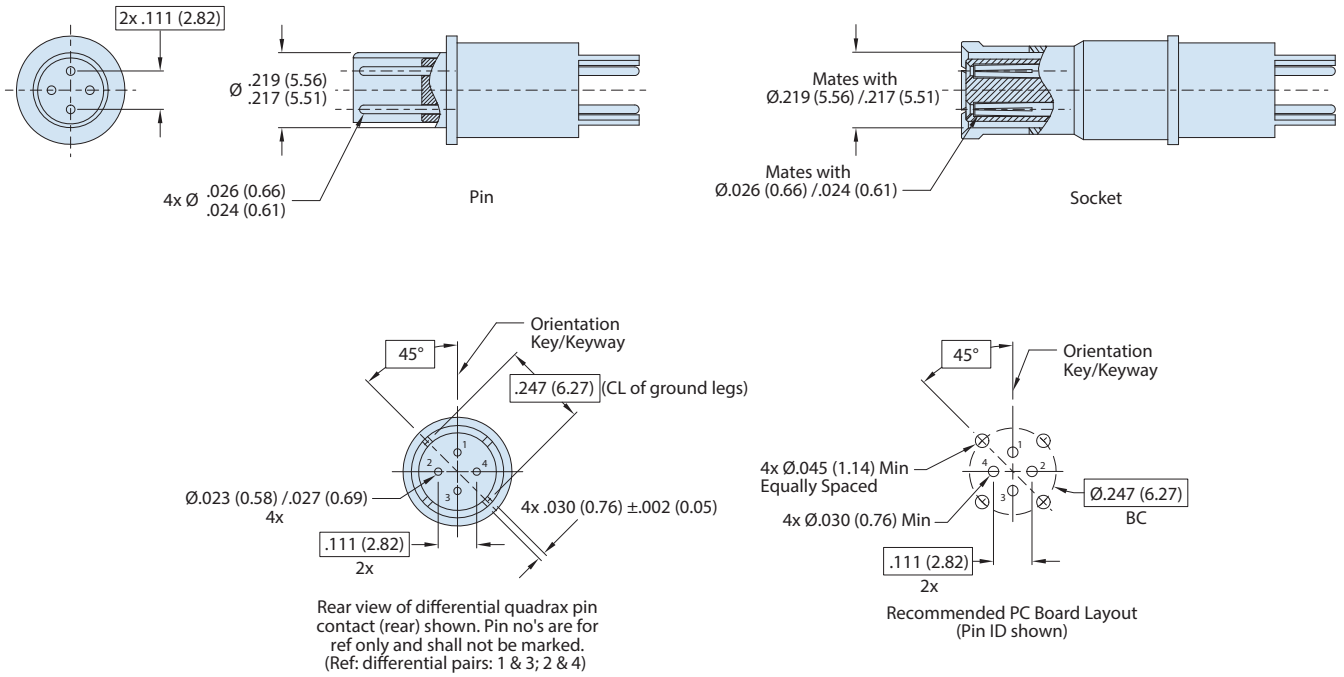
DETAIL A (TYP)

# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options



## QUADRAX CONTACTS

### QUADRAX CONTACT DETAILS



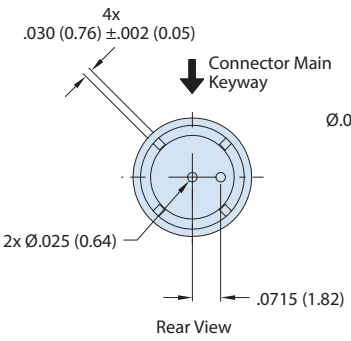
# MIL-DTL-38999 Series IV Type
# 234-218 High-speed panel mount receptacles, PC tail contact options



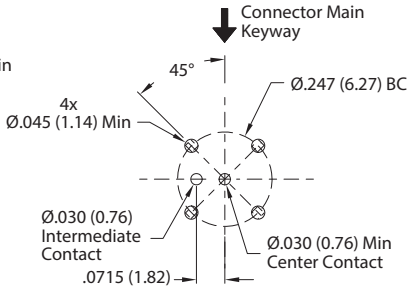
## TRIAX / CONCENTRIC TWINAX CONTACTS

### TRIAX / CONCENTRIC TWINAX PIN

Size #8 Concentric Twinax Pin, Pc Tail Detail
Interface per M39029/90 and/113

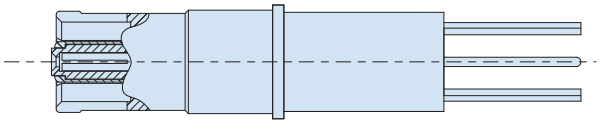



Rear View

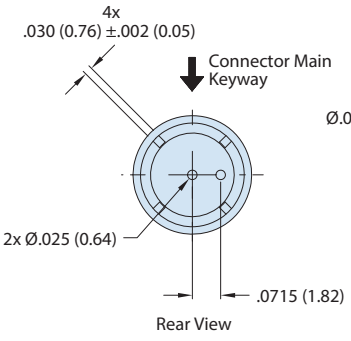



Recommended
Twinax PCB Layout

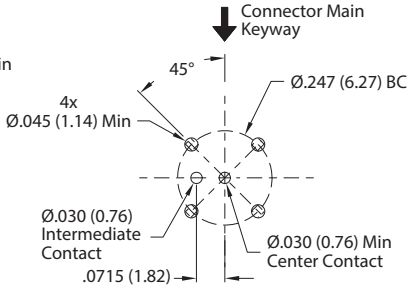
### TRIAX / CONCENTRIC TWINAX SOCKET



Size #8 Concentric Twinax Socket, PC Tail Detail
Interface per M39029/91 and/114




Rear View



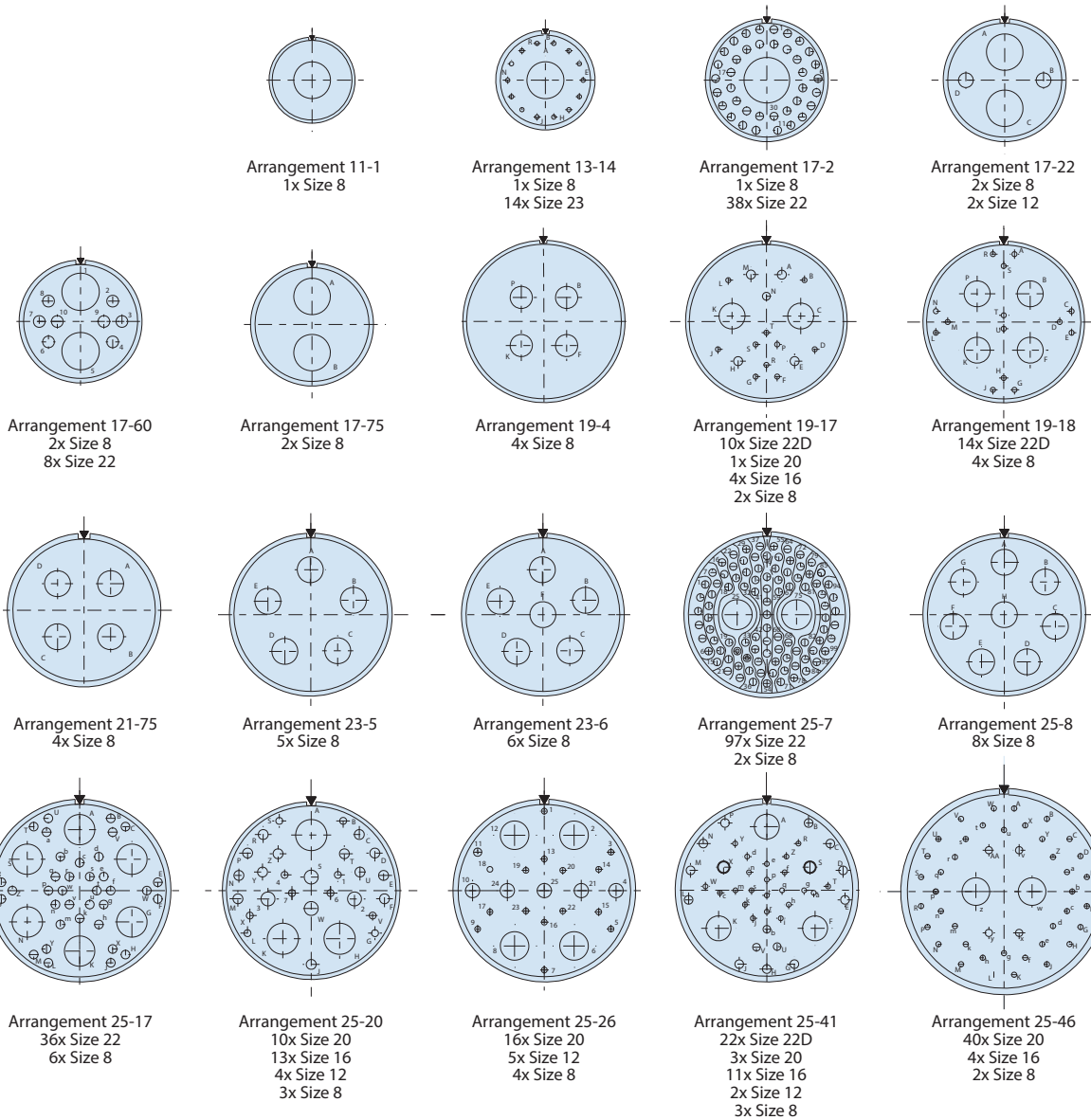

Recommended
Twinax PCB Layout

# SuperNine® Series IV Environmental

## MIL-DTL-38999 Series IV Type
## 234-217 High-speed plug, and panel mount and jam nut receptacles ins. arrangements



### HIGH-SPEED AND HYBRID INSERT ARRANGEMENTS



Arrangement 11-1
1x Size 8

Arrangement 13-14
1x Size 8
14x Size 23

Arrangement 17-2
1x Size 8
38x Size 22

Arrangement 17-22
2x Size 8
2x Size 12

Arrangement 17-60
2x Size 8
8x Size 22

Arrangement 17-75
2x Size 8

Arrangement 19-4
4x Size 8

Arrangement 19-17
10x Size 22D
1x Size 20
4x Size 16
2x Size 8

Arrangement 19-18
14x Size 22D
4x Size 8

Arrangement 21-75
4x Size 8

Arrangement 23-5
5x Size 8

Arrangement 23-6
6x Size 8

Arrangement 25-7
97x Size 22
2x Size 8

Arrangement 25-8
8x Size 8

Arrangement 25-17
36x Size 22
6x Size 8

Arrangement 25-20
10x Size 20
13x Size 16
4x Size 12
3x Size 8

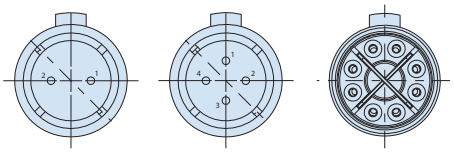
Arrangement 25-26
16x Size 20
5x Size 12
4x Size 8

Arrangement 25-41
22x Size 22D
3x Size 20
11x Size 16
2x Size 12
3x Size 8

Arrangement 25-46
40x Size 20
4x Size 16
2x Size 8

Insert arrangements, mating face of pin insert shown. Replace X with C, D, E,Q, P, or T (See Table III).

### CONTACT INNER PIN ORIENTATION



Differential Twinax

Quadrax

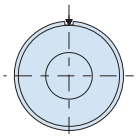
El Ochito

# SuperNine® Series IV Environmental

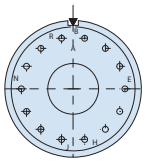
## MIL-DTL-38999 Series IV Type
## 234-218 High-speed panel mount receptacles, PC tail insert arrangements



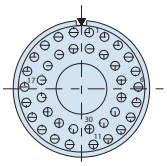
**FIGURE 1 - INSERT ARRANGEMENTS**



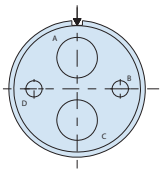
Arrangement 11X-1
1X Size 8



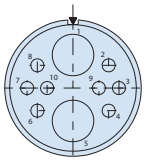
Arrangement 13X-14
1X Size 8
14X Size 23



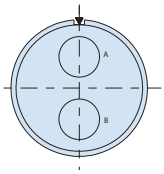
Arrangement 17X-2
1X Size 8
38X Size 22



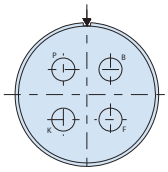
Arrangement 17X-22
(IAW prEN 3645-001)
2X Size 8
2X Size 12



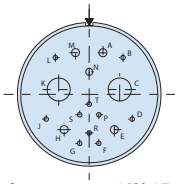
Arrangement 17X-60
2X Size 8
8X Size 22



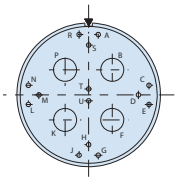
Arrangement 17X-75
(IAW prEN 3645-001)
2X Size 8



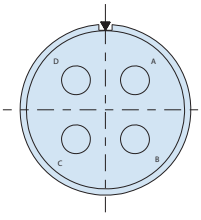
Arrangement 19X-4
4X Size 8



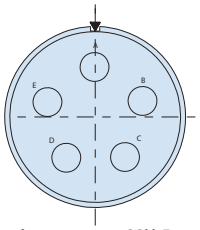
Arrangement 19X-17
10X Size 22D
1X Size 20
4X Size 16
2X Size 8



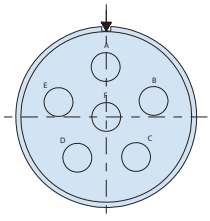
Arrangement 19X-18
14X Size 22D
4X Size 8



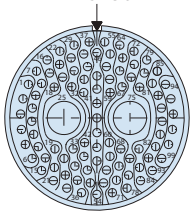
Arrangement 21X-75
4X Size 8



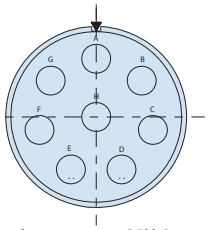
Arrangement 23X-5
(IAW prEN 3645-001)



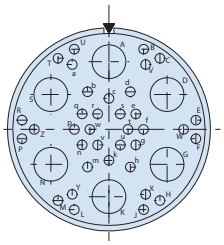
Arrangement 23X-6
(IAW prEN 3645-001)
5X Size 8



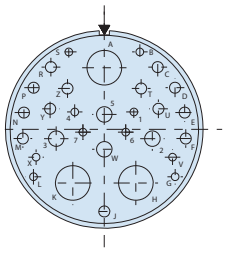
Arrangement 25X-7
97X Size 22
2X Size 8
6X Size 8



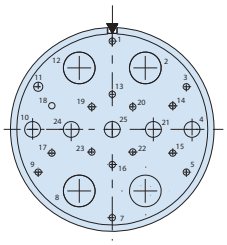
Arrangement 25X-8
8X Size 8



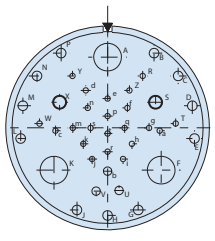
Arrangement 25X-17
36X Size 22



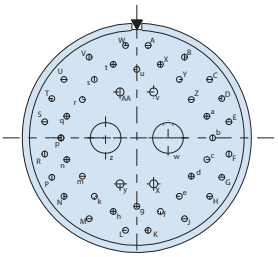
Arrangement 25X-20
(IAW prEN 3645-001)
10X Size 20
13X Size 16
4X Size 12
3X Size 8



Arrangement 25X-26
(IAW prEN 3645-001)
16X Size 20, 5X Size 12
4X Size 8



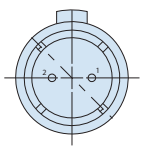
Arrangement 25X-41
22X Size 22D, 3X Size 20
11X Size 16, 2X Size 12
3X Size 8



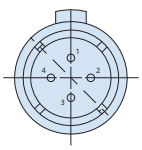
Arrangement 25X-46
40X Size 20
4X Size 16
2X Size 8

Figure 1
Insert arrangements, mating face of pin insert shown. Replace X with C, D, E, Q or T (See Table VI)

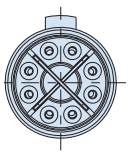
**FIGURE 2 - CONTACT INNER PIN ORIENTATION**



Differential Twinax



Quadrax



El Ochito

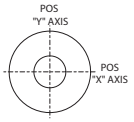
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

11-1

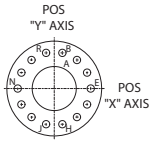
1 #8




| I.D. No. | Location | | Gage |
|---|---|---|---|
| | X | Y | |
| A | .000 | .000 | NO. 8 |

13-4

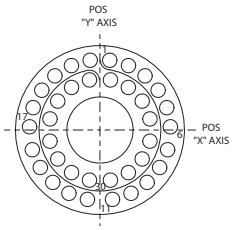
1 #8
14 #23




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | .000 | .000 | NO. 8 |
| B | .049 | .215 | NO. 23 |
| C | .137 | .172 | NO. 23 |
| D | .198 | .096 | NO. 23 |
| E | .220 | .000 | NO. 23 |
| F | .198 | -.096 | NO. 23 |
| G | .137 | -.172 | NO. 23 |
| H | .049 | -.215 | NO. 23 |
| J | -.049 | -.215 | NO. 23 |
| K | -.137 | -.172 | NO. 23 |
| M | -.198 | -.096 | NO. 23 |
| N | -.220 | .000 | NO. 23 |
| P | -.198 | .096 | NO. 23 |
| Q | -.137 | .172 | NO. 23 |
| R | -.049 | .215 | NO. 23 |

17-2

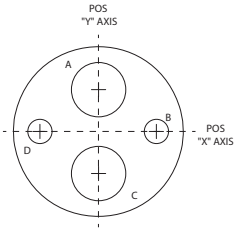
1 #8
38 #22




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| 1 | .046 | .325 | NO. 22D | 21 | -.133 | .299 | NO. 22D |
| 2 | .133 | .299 | NO. 22D | 22 | -.046 | .325 | NO. 22D |
| 3 | .211 | .251 | NO. 22D | 23 | .046 | .231 | NO. 22D |
| 4 | .272 | .183 | NO. 22D | 24 | .129 | .197 | NO. 22D |
| 5 | .312 | .101 | NO. 22D | 25 | .194 | .133 | NO. 22D |
| 6 | .328 | .011 | NO. 22D | 26 | .230 | .050 | NO. 22D |
| 7 | .318 | -.079 | NO. 22D | 27 | .232 | -.040 | NO. 22D |
| 8 | .284 | -.164 | NO. 22D | 28 | .200 | -.125 | NO. 22D |
| 9 | .228 | -.236 | NO. 22D | 29 | .137 | -.191 | NO. 22D |
| 10 | .154 | -.289 | NO. 22D | 30 | .055 | -.229 | NO. 22D |
| 11 | .068 | -.321 | NO. 22D | 31 | -.055 | -.229 | NO. 22D |
| 12 | -.068 | -.321 | NO. 22D | 32 | -.137 | -.191 | NO. 22D |
| 13 | .154 | -.289 | NO. 22D | 33 | -.200 | -.125 | NO. 22D |
| 14 | -.228 | -.236 | NO. 22D | 34 | -.232 | -.040 | NO. 22D |
| 15 | -.284 | -.164 | NO. 22D | 35 | -.230 | .050 | NO. 22D |
| 16 | -.318 | -.079 | NO. 22D | 36 | -.194 | .133 | NO. 22D |
| 17 | -.328 | .011 | NO. 22D | 37 | -.129 | .197 | NO. 22D |
| 18 | -.312 | .101 | NO. 22D | 38 | -.046 | .231 | NO. 22D |
| 19 | -.272 | .183 | NO. 22D | 39 | .000 | .000 | NO. 8 |
| 20 | -.211 | .251 | NO. 22D | | | | |

17-22

2 #8
2 #12




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | 0 | .180 | NO. 8 |
| B | .249 | 0 | NO.12 |
| C | 0 | -.180 | NO. 8 |
| D | .249 | 0 | NO. 12 |

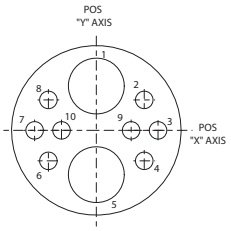
# PCB Footprints: High-Speed

PCB FOOTPRINTS

Mating face of pin insert shown (socket will be opposite)

17-60

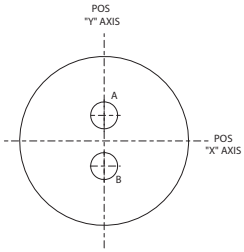
2 #8
8 #22




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| 1 | .000 | .180 | NO. 8 |
| 2 | .240 | .145 | NO. 22D |
| 3 | .297 | .000 | NO. 22D |
| 4 | .240 | -.145 | NO. 22D |
| 5 | .000 | -.180 | NO. 8 |
| 6 | -.240 | -.145 | NO. 22D |
| 7 | -.297 | .000 | NO. 22D |
| 8 | -.240 | .145 | NO. 22D |
| 9 | .177 | .000 | NO. 22D |
| 10 | -.177 | .000 | NO. 22D |

17-75

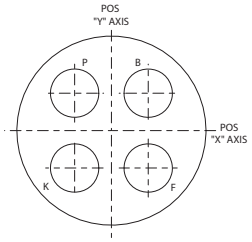
2 #8




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | .000 | .187 | NO. 8 |
| B | .000 | -.187 | NO. 8 |

19-4

4 #8




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| B | .180 | .180 | NO. 8 |
| F | .180 | -.180 | NO. 8 |
| K | -.180 | -.180 | NO. 8 |
| P | -.180 | .180 | NO. 8 |

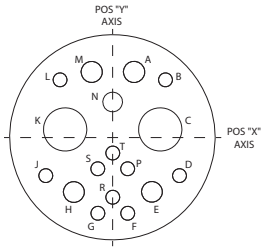
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

19-17

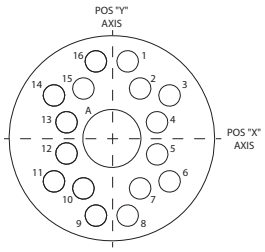
2X #8
26X #20




| I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|
| A | 0.099 | 0.301 | NO. 20 |
| B | 0.244 | 0.265 | NO. 20 |
| C | 0.220 | 0.035 | NO. 8 |
| D | 0.310 | -0.178 | NO. 20 |
| E | 0.181 | -0.254 | NO. 20 |
| F | 0.069 | -0.353 | NO. 20 |
| G | -0.069 | -0.353 | NO. 20 |
| H | -0.181 | -0.254 | NO. 20 |
| J | -0.310 | -0.178 | NO. 20 |
| K | -0.220 | 0.035 | NO. 8 |
| L | -0.244 | 0.265 | NO. 20 |
| M | -0.099 | 0.301 | NO. 20 |
| N | 0.000 | 0.162 | NO. 20 |
| P | 0.069 | -0.147 | NO. 20 |
| R | 0.000 | -0.278 | NO. 20 |
| S | -0.069 | -0.147 | NO. 20 |
| T | 0.000 | -0.071 | NO. 20 |

19A-17

1X #8
20X #16




| I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|
| 1 | +.072 | +0.328 | NO. 20 |
| 2 | +.138 | +0.208 | NO. 20 |
| 3 | +.276 | +0.195 | NO. 20 |
| 4 | +.239 | +0.067 | NO. 20 |
| 5 | +.239 | -0.067 | NO. 20 |
| 6 | +.276 | -0.195 | NO. 20 |
| 7 | +.138 | -0.208 | NO. 20 |
| 8 | +.072 | -0.328 | NO. 20 |
| 9 | -0.072 | -0.328 | NO. 20 |
| 10 | -0.138 | -0.208 | NO. 20 |
| 11 | -0.276 | -0.195 | NO. 20 |
| 12 | -0.239 | -0.067 | NO. 20 |
| 13 | -0.239 | +0.067 | NO. 20 |
| 14 | -0.276 | +0.195 | NO. 20 |
| 15 | -0.138 | +0.208 | NO. 20 |
| 16 | -0.072 | +0.328 | NO. 20 |
| A | +.000 | +0.000 | NO. 8 |

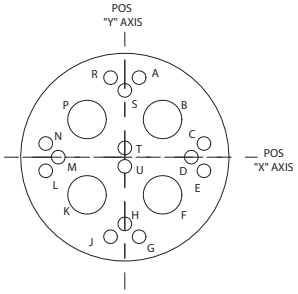
# PCB Footprints: High-Speed

PCB FOOTPRINTS

Mating face of pin insert shown (socket will be opposite)

19-18

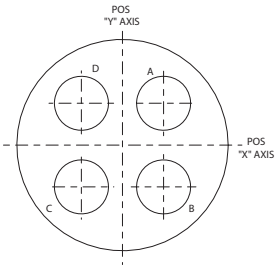
4x #8
14X #22




| I.D. NO. | LOCATION | | GAGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | +.068 | +.380 | NO. 22 | L | -0.377 | -0.065 | NO. 22 |
| B | +.180 | +.180 | NO. 8 | M | -0.317 | +.000 | NO. 22 |
| C | +.377 | +.065 | NO. 22 | N | -0.377 | +.065 | NO. 22 |
| D | +.317 | +.000 | NO. 22 | P | -0.180 | +.180 | NO. 8 |
| E | +.377 | -0.065 | NO. 22 | R | -0.068 | +.380 | NO. 22 |
| F | +.180 | -0.180 | NO. 8 | S | +.000 | +.319 | NO. 22 |
| G | +.068 | -.380 | NO. 22 | T | +.000 | +.044 | NO. 22 |
| K | -0.180 | -0.180 | NO. 8 | U | +.000 | -0.044 | NO. 22 |

21-75

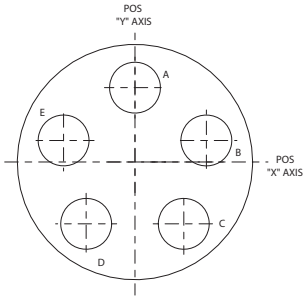
4 #8




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| B | .180 | .180 | NO. 8 |
| F | .180 | -.180 | NO. 8 |
| K | -.180 | -.180 | NO. 8 |
| P | -.180 | .180 | NO. 8 |

23-5

5 #8



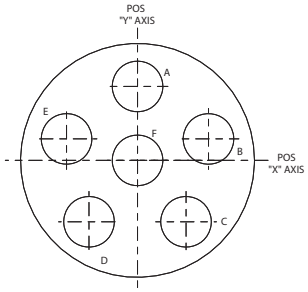

| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | .000 | .364 | NO. 8 |
| B | .347 | .113 | NO. 8 |
| C | .214 | -.295 | NO. 8 |
| D | -.214 | -.295 | NO. 8 |
| E | -.347 | .113 | NO. 8 |

# PCB Footprints: High-Speed

Mating face of pin insert shown (socket will be opposite)

23-6

6 #8




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | .000 | .364 | NO. 8 |
| B | .347 | .113 | NO. 8 |
| C | .214 | -.295 | NO. 8 |
| D | -.214 | -.295 | NO. 8 |
| E | -.347 | .113 | NO. 8 |
| F | .000 | .000 | NO. 8 |

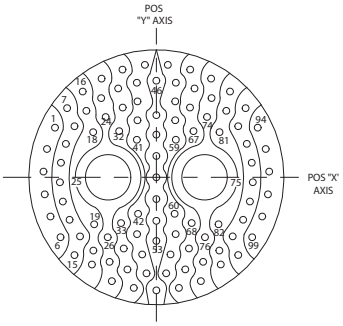
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

25-7

2 #8
97 #22D




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| 1 | -.494 | .242 | NO. 22 | 51 | .000 | -.106 | NO. 22 |
| 2 | -.533 | .138 | NO. 22 | 52 | .000 | -.212 | NO. 22 |
| 3 | -.550 | .028 | NO. 22 | 53 | .000 | -.310 | NO. 22 |
| 4 | -.544 | -.083 | NO. 22 | 54 | .000 | -.551 | NO. 22 |
| 5 | -.516 | -.191 | NO. 22 | 55 | .056 | .548 | NO. 22 |
| 6 | -.467 | -.292 | NO. 22 | 56 | .095 | .461 | NO. 22 |
| 7 | -.435 | .337 | NO. 22 | 57 | .068 | .370 | NO. 22 |
| 8 | -.399 | .249 | NO. 22 | 58 | .092 | .278 | NO. 22 |
| 9 | -.441 | .163 | NO. 22 | 59 | .095 | .183 | NO. 22 |
| 10 | -.465 | .071 | NO. 22 | 60 | .089 | -.178 | NO. 22 |
| 11 | -.470 | -.024 | NO. 22 | 61 | .094 | -.277 | NO. 22 |
| 12 | -.456 | -.118 | NO. 22 | 62 | .069 | -.376 | NO. 22 |
| 13 | -.423 | -.207 | NO. 22 | 63 | .048 | -.468 | NO. 22 |
| 14 | -.372 | -.288 | NO. 22 | 64 | .165 | .525 | NO. 22 |
| 15 | -.399 | -.379 | NO. 22 | 65 | .186 | .433 | NO. 22 |
| 16 | -.359 | .418 | NO. 22 | 66 | .164 | .340 | NO. 22 |
| 17 | -.341 | .324 | NO. 22 | 67 | .181 | .225 | NO. 22 |
| 18 | -.308 | .222 | NO. 22 | 68 | .172 | -.223 | NO. 22 |
| 19 | -.303 | -.223 | NO. 22 | 69 | .159 | -.347 | NO. 22 |
| 20 | -.307 | -.357 | NO. 22 | 70 | .141 | -.449 | NO. 22 |
| 21 | -.314 | -.452 | NO. 22 | 71 | .111 | -.539 | NO. 22 |
| 22 | -.267 | .481 | NO. 22 | 72 | .267 | .481 | NO. 22 |
| 23 | -.269 | .386 | NO. 22 | 73 | .269 | .386 | NO. 22 |
| 24 | -.247 | .294 | NO. 22 | 74 | .247 | .294 | NO. 22 |
| 25 | -.238 | .000 | NO. 8 | 75 | .238 | .000 | NO. 8 |
| 26 | -.237 | -.292 | NO. 22 | 76 | .237 | -.292 | NO. 22 |
| 27 | -.228 | -.412 | NO. 22 | 77 | .228 | -.412 | NO. 22 |
| 28 | -.217 | -.506 | NO. 22 | 78 | .217 | -.506 | NO. 22 |
| 29 | -.165 | .525 | NO. 22 | 79 | .359 | .418 | NO. 22 |
| 30 | -.186 | .433 | NO. 22 | 80 | .341 | .324 | NO. 22 |
| 31 | -.164 | .340 | NO. 22 | 81 | .308 | .222 | NO. 22 |
| 32 | -.181 | .225 | NO. 22 | 82 | .303 | -.223 | NO. 22 |
| 33 | -.172 | -.223 | NO. 22 | 83 | .307 | -.357 | NO. 22 |
| 34 | -.159 | -.347 | NO. 22 | 84 | .314 | -.452 | NO. 22 |
| 35 | -.141 | -.449 | NO. 22 | 85 | .435 | .337 | NO. 22 |
| 36 | -.111 | -.539 | NO. 22 | 86 | .399 | .249 | NO. 22 |
| 37 | -.056 | .548 | NO. 22 | 87 | .441 | .163 | NO. 22 |
| 38 | -.095 | .461 | NO. 22 | 88 | .465 | .071 | NO. 22 |
| 39 | -.068 | .370 | NO. 22 | 89 | .470 | -.024 | NO. 22 |
| 40 | -.092 | .278 | NO. 22 | 90 | .456 | -.118 | NO. 22 |
| 41 | -.095 | .183 | NO. 22 | 91 | .423 | -.207 | NO. 22 |
| 42 | -.089 | -.178 | NO. 22 | 92 | .372 | -.288 | NO. 22 |
| 43 | -.094 | -.277 | NO. 22 | 93 | .399 | -.379 | NO. 22 |
| 44 | -.069 | -.376 | NO. 22 | 94 | .494 | .242 | NO. 22 |
| 45 | -.048 | -.468 | NO. 22 | 95 | .533 | .138 | NO. 22 |
| 46 | .000 | .471 | NO. 22 | 96 | .550 | .028 | NO. 22 |
| 47 | .000 | .303 | NO. 22 | 97 | .544 | -.083 | NO. 22 |
| 48 | .000 | .208 | NO. 22 | 98 | .516 | -.191 | NO. 22 |
| 49 | .000 | .104 | NO. 22 | 99 | .467 | -.292 | NO. 22 |
| 50 | .000 | .000 | NO. 22 | | | | |

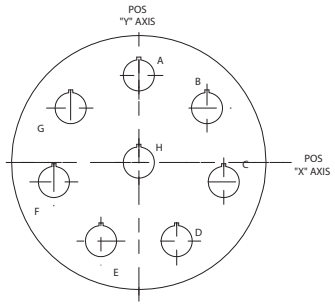
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

25-8

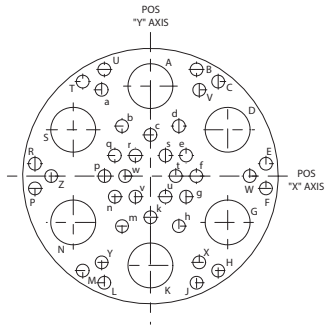
7 #8




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | .000 (.00) | .426 (1.82) | NO. 8 |
| B | .333 (8.46) | .266 (6.76) | NO. 8 |
| C | .415 (10.54) | -.095 (2.41) | NO. 8 |
| D | .185 (4.70) | -.384 (9.75) | NO. 8 |
| E | -.185 (4.70) | -.384 (9.75) | NO. 8 |
| F | -.415 (-10.54) | -.095 (2.41) | NO. 8 |
| G | -.333 (8.46) | .266 (6.76) | NO. 8 |
| H | .000 (.00) | .000 (.00) | NO. 8 |

25-17

6 #8
36 #22D




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | .000 | .437 | NO. 8 | a | -.237 | .419 | NO. 22 |
| B | .224 | .518 | NO. 22 | b | -.138 | .243 | NO. 22 |
| C | .329 | .459 | NO. 22 | c | .000 | .200 | NO. 22 |
| D | .375 | .225 | NO. 8 | d | .138 | .243 | NO. 22 |
| E | .561 | .060 | NO. 22 | e | .173 | .100 | NO. 22 |
| F | .561 | -.060 | NO. 22 | f | .223 | .000 | NO. 22 |
| G | .375 | -.225 | NO. 8 | g | .173 | -.100 | NO. 22 |
| H | .329 | -.459 | NO. 22 | h | .138 | -.243 | NO. 22 |
| J | .224 | -.518 | NO. 22 | k | .000 | -.200 | NO. 22 |
| K | .000 | -.437 | NO. 8 | m | -.138 | -.243 | NO. 22 |
| L | -.224 | -.518 | NO. 22 | n | -.173 | -.100 | NO. 22 |
| M | -.329 | -.459 | NO. 22 | p | -.223 | .000 | NO. 22 |
| N | -.375 | -.225 | NO. 8 | q | -.173 | .100 | NO. 22 |
| P | -.561 | -.060 | NO. 22 | r | -.073 | .100 | NO. 22 |
| R | -.561 | .060 | NO. 22 | s | .073 | .100 | NO. 22 |
| S | -.375 | .225 | NO. 8 | t | .123 | .000 | NO. 22 |
| T | -.329 | .459 | NO. 22 | u | .073 | -.100 | NO. 22 |
| U | -.224 | .518 | NO. 22 | v | -.073 | -.100 | NO. 22 |
| V | .237 | .419 | NO. 22 | w | -.123 | .000 | NO. 22 |
| W | .482 | .000 | NO. 22 | | | | |
| X | .237 | -.419 | NO. 22 | | | | |
| Y | -.237 | -.419 | NO. 22 | | | | |
| Z | -.482 | .000 | NO. 22 | | | | |

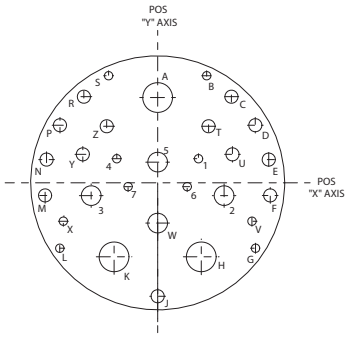
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

25-20

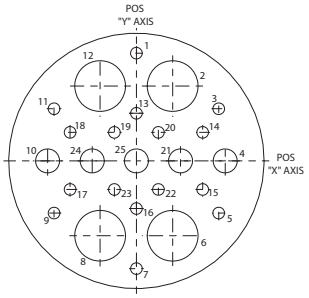
3 #8
4 #12
3 #16
10 #20




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | .000 | .407 | NO. 8 | S | .234 | .511 | NO. 20 |
| B | .234 | .511 | NO. 20 | T | .243 | .270 | NO. 16 |
| C | .352 | .411 | NO. 16 | U | .357 | .136 | NO. 16 |
| D | .466 | .275 | NO. 16 | V | .450 | -.183 | NO. 20 |
| E | .530 | .111 | NO. 16 | W | .000 | -.131 | NO. 12 |
| F | .537 | -.060 | NO. 16 | X | .450 | -.183 | NO. 20 |
| G | .467 | -.312 | NO. 20 | Y | .357 | .136 | NO. 16 |
| H | .208 | -.353 | NO. 8 | Z | .243 | .270 | NO. 16 |
| J | .000 | -.541 | NO. 16 | 1 | .195 | .115 | NO. 20 |
| K | -.208 | -.353 | NO. 8 | 2 | .317 | -.061 | NO. 12 |
| L | -.467 | -.312 | NO. 20 | 3 | -.317 | -.061 | NO. 12 |
| M | -.537 | -.060 | NO. 16 | 4 | -.195 | .115 | NO. 20 |
| N | .530 | .111 | NO. 16 | 5 | .000 | .099 | NO. 12 |
| P | .466 | .275 | NO. 16 | 6 | .141 | -.018 | NO. 20 |
| R | .352 | .411 | NO. 16 | 7 | -.141 | -.018 | NO. 20 |

25-26

4 #8
5 #12
16 #20




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| 1 | .000 | .548 | NO. 20 |
| 2 | .205 | .382 | NO. 8 |
| 3 | .460 | .265 | NO. 20 |
| 4 | .495 | .000 | NO. 12 |
| 5 | .460 | -.265 | NO. 20 |
| 6 | .205 | -.382 | NO. 8 |
| 7 | .000 | -.548 | NO. 20 |
| 8 | -.205 | -.382 | NO. 8 |
| 9 | -.460 | -.265 | NO. 20 |
| 10 | -.495 | .000 | NO. 12 |
| 11 | -.460 | .265 | NO. 20 |
| 12 | -.205 | .382 | NO. 8 |
| 13 | .000 | .218 | NO. 20 |
| 14 | .375 | .147 | NO. 20 |
| 15 | .375 | -.147 | NO. 20 |
| 16 | .000 | -.218 | NO. 20 |
| 17 | .375 | -.147 | NO. 20 |
| 18 | .375 | .147 | NO. 20 |
| 19 | .127 | .140 | NO. 20 |
| 20 | .127 | .140 | NO. 20 |
| 21 | .255 | .000 | NO. 12 |
| 22 | .127 | -.140 | NO. 20 |
| 23 | .127 | -.140 | NO. 20 |
| 24 | .255 | .000 | NO. 12 |
| 25 | .000 | .000 | NO. 12 |

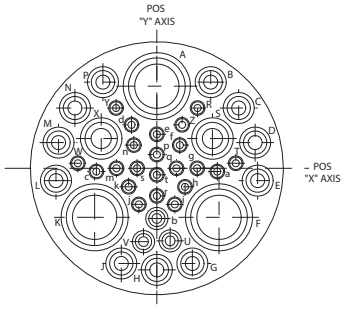
# PCB Footprints: High-Speed



Mating face of pin insert shown (socket will be opposite)

25-41

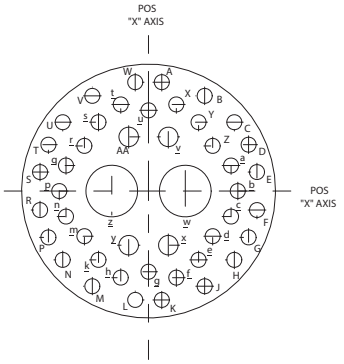
3 #8
2 #12
11 #16
3 #20
22 #22D




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | .000 | .425 | NO. 8 | a | .313 | -.017 | NO. 22D |
| B | .279 | .446 | NO. 16 | b | .000 | -.260 | NO. 20 |
| C | .424 | .312 | NO. 16 | c | -.313 | -.017 | NO. 22D |
| D | .509 | .133 | NO. 16 | d | -.131 | .225 | NO. 22D |
| E | .522 | -.064 | NO. 16 | e | .000 | .176 | NO. 22D |
| F | .322 | -.254 | NO. 8 | f | .119 | .120 | NO. 22D |
| G | .184 | -.493 | NO. 16 | g | .209 | .000 | NO. 22D |
| H | .000 | -.526 | NO. 16 | h | .146 | -.096 | NO. 22D |
| J | -.184 | -.493 | NO. 16 | i | .093 | -.187 | NO. 22D |
| K | -.322 | -.254 | NO. 8 | j | -.093 | -.187 | NO. 22D |
| L | -.522 | -.064 | NO. 16 | k | -.146 | -.096 | NO. 22D |
| M | -.509 | .133 | NO. 16 | m | -.209 | .000 | NO. 22D |
| N | -.424 | .312 | NO. 16 | n | -.119 | .120 | NO. 22D |
| P | -.279 | .446 | NO. 16 | p | .000 | .071 | NO. 22D |
| R | .211 | .312 | NO. 22D | q | .102 | .000 | NO. 22D |
| S | .288 | .154 | NO. 12 | r | .000 | -.143 | NO. 22D |
| T | .409 | .026 | NO. 22D | s | -.102 | .000 | NO. 22D |
| U | .069 | -.380 | NO. 20 | t | .000 | -.034 | NO. 22D |
| V | -.069 | -.380 | NO. 20 | | | | |
| W | -.409 | .026 | NO. 22D | | | | |
| X | -.288 | .154 | NO. 12 | | | | |
| Y | -.211 | .312 | NO. 22D | | | | |
| Z | .131 | .225 | NO. 22D | | | | |

25-90
&
25-46

2 #8
4 #16
40 #20




| I.D. NO. | LOCATION | | GAUGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | .065 | .533 | NO. 20 | a | .404 | .125 | NO. 20 |
| B | .275 | .466 | NO. 20 | b | .437 | .000 | NO. 20 |
| C | .420 | .337 | NO. 20 | c | .404 | -.125 | NO. 20 |
| D | .490 | .227 | NO. 20 | d | .314 | -.221 | NO. 20 |
| E | .531 | .093 | NO. 20 | e | .245 | -.337 | NO. 20 |
| F | .531 | -.093 | NO. 20 | f | .136 | -.424 | NO. 20 |
| G | .490 | -.227 | NO. 20 | g | .000 | -.395 | NO. 20 |
| H | .420 | -.337 | NO. 20 | h | -.136 | -.424 | NO. 20 |
| J | .275 | -.466 | NO. 20 | k | -.245 | -.337 | NO. 20 |
| K | .065 | -.533 | NO. 20 | m | -.314 | -.221 | NO. 20 |
| L | -.065 | -.533 | NO. 20 | n | -.404 | -.125 | NO. 20 |
| M | -.275 | -.466 | NO. 20 | p | -.437 | .000 | NO. 20 |
| N | -.420 | -.337 | NO. 20 | q | -.404 | .125 | NO. 20 |
| P | -.490 | -.227 | NO. 20 | r | -.314 | .221 | NO. 20 |
| R | -.531 | -.093 | NO. 20 | s | -.245 | .337 | NO. 20 |
| S | -.531 | .093 | NO. 20 | t | -.136 | .424 | NO. 20 |
| T | -.490 | .227 | NO. 20 | u | .000 | .395 | NO. 20 |
| U | -.420 | .337 | NO. 20 | v | .097 | .265 | NO. 16 |
| V | -.275 | .466 | NO. 20 | w | .180 | .000 | NO. 8 |
| W | -.065 | .533 | NO. 20 | x | .097 | -.265 | NO. 16 |
| X | .136 | .424 | NO. 20 | y | -.097 | -.265 | NO. 16 |
| Y | .245 | .337 | NO. 20 | z | -.180 | .000 | NO. 8 |
| Z | .314 | .221 | NO. 20 | AA | -.097 | .265 | NO. 16 |

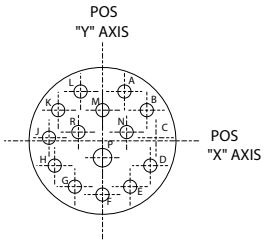
# PCB Footprints: Combo

PCB FOOTPRINTS

Mating face of pin insert shown (socket will be opposite)

## 15-15

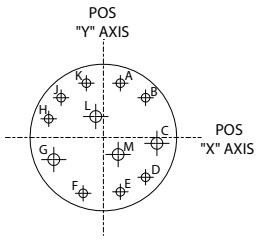
1x #16
14X #20




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | 0.100 | 0.225 | NO. 20 |
| B | 0.202 | 0.140 | NO. 20 |
| C | 0.244 | 0.014 | NO. 20 |
| D | 0.218 | -0.113 | NO. 20 |
| E | 0.126 | -0.209 | NO. 20 |
| F | 0.000 | -0.245 | NO. 20 |
| G | -0.126 | -0.209 | NO. 20 |
| H | -0.218 | -0.113 | NO. 20 |
| J | -0.244 | 0.014 | NO. 20 |
| K | -0.202 | 0.140 | NO. 20 |
| L | -0.100 | 0.225 | NO. 20 |
| M | 0.000 | 0.140 | NO. 20 |
| N | 0.110 | 0.040 | NO. 20 |
| P | 0.000 | -0.077 | NO. 16 |
| R | -0.110 | 0.040 | NO. 20 |

## 15-97

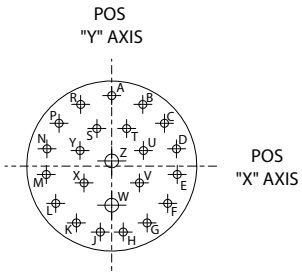
4X #16
8X #20




| I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|
| | X | Y | |
| A | 0.065 | 0.234 | NO. 16 |
| B | 0.178 | 0.178 | NO. 16 |
| C | 0.230 | -0.023 | NO. 20 |
| D | 0.178 | -0.178 | NO. 16 |
| E | 0.065 | -0.234 | NO. 16 |
| F | -0.089 | -0.235 | NO. 16 |
| G | -0.207 | -0.095 | NO. 20 |
| H | -0.234 | 0.065 | NO. 16 |
| J | -0.178 | 0.178 | NO. 16 |
| K | -0.065 | 0.234 | NO. 16 |
| L | -0.047 | 0.081 | NO. 20 |
| M | 0.047 | -0.081 | NO. 20 |

## 17-99

2X #16
37X #20




| I.D. NO. | LOCATION | | GAGE | I.D. NO. X | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | 0.000 | 0.321 | NO. 20 | N | -0.305 | 0.099 | NO. 20 |
| B | 0.131 | 0.293 | NO. 20 | P | -0.239 | 0.214 | NO. 20 |
| C | 0.239 | 0.214 | NO. 20 | R | -0.131 | 0.293 | NO. 20 |
| D | 0.305 | 0.099 | NO. 20 | S | -0.070 | 0.177 | NO. 20 |
| E | 0.319 | -0.034 | NO. 20 | T | 0.070 | 0.177 | NO. 20 |
| F | 0.278 | -0.161 | NO. 20 | U | 0.175 | 0.094 | NO. 20 |
| G | 0.189 | -0.260 | NO. 20 | V | 0.150 | -0.075 | NO. 20 |
| H | 0.067 | -0.314 | NO. 20 | W | 0.000 | -0.161 | NO. 16 |
| J | -0.067 | -0.314 | NO. 20 | X | -0.150 | -0.075 | NO. 20 |
| K | -0.189 | -0.260 | NO. 20 | Y | -0.175 | 0.094 | NO. 20 |
| L | -0.278 | -0.161 | NO. 20 | Z | 0.000 | 0.025 | NO. 16 |
| M | -0.319 | -0.034 | NO. 20 | | | | |

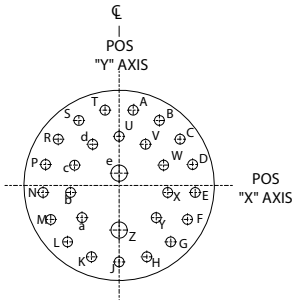
# PCB Footprints: Combo

Mating face of pin insert shown (socket will be opposite)



19-28

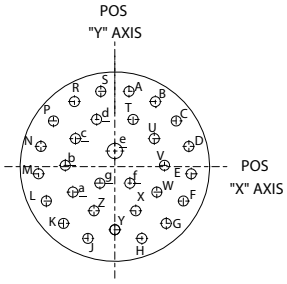
2X #16
26X #20




| I.D. NO. | LOCATION X | LOCATION Y | GAGE | I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|---|---|---|---|
| A | 0.066 | 0.353 | NO. 20 | R | -0.286 | 0.217 | NO. 20 |
| B | 0.189 | 0.305 | NO. 20 | S | -0.189 | 0.305 | NO. 20 |
| C | 0.286 | 0.217 | NO. 20 | T | -0.066 | 0.353 | NO. 20 |
| D | 0.345 | 0.098 | NO. 20 | U | 0 | 0.230 | NO. 20 |
| E | 0.357 | -0.033 | NO. 20 | V | 0.124 | 0.193 | NO. 20 |
| F | 0.321 | -0.160 | NO. 20 | W | 0.209 | 0.095 | NO. 20 |
| G | 0.242 | -0.265 | NO. 20 | X | 0.228 | -0.033 | NO. 20 |
| H | 0.130 | -0.335 | NO. 20 | Y | 0.174 | -0.151 | NO. 20 |
| J | 0 | -0.359 | NO. 20 | Z | 0 | -0.191 | NO. 16 |
| K | -0.130 | -0.335 | NO. 20 | a | -0.174 | -0.151 | NO. 20 |
| L | -0.242 | -0.265 | NO. 20 | b | -0.228 | -0.033 | NO. 20 |
| M | -0.321 | -0.160 | NO. 20 | c | -0.209 | 0.095 | NO. 20 |
| N | -0.357 | -0.033 | NO. 20 | d | -0.124 | 0.193 | NO. 20 |
| P | -0.345 | 0.098 | NO. 20 | e | 0 | 0.062 | NO. 16 |

19-30

1X #16
29X #20




| I.D. NO. | LOCATION X | LOCATION Y | GAGE | I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|---|---|---|---|
| A | 0.065 | 0.346 | NO. 20 | S | -0.065 | 0.346 | NO. 20 |
| B | 0.186 | 0.299 | NO. 20 | T | 0.084 | 0.217 | NO. 20 |
| C | 0.282 | 0.210 | NO. 20 | U | 0.181 | 0.129 | NO. 20 |
| D | 0.340 | 0.093 | NO. 20 | V | 0.228 | 0.008 | NO. 20 |
| E | 0.351 | -0.033 | NO. 20 | W | 0.193 | -0.117 | NO. 20 |
| F | 0.315 | -0.158 | NO. 20 | X | 0.096 | -0.203 | NO. 20 |
| G | 0.236 | -0.261 | NO. 20 | Y | 0.000 | -0.290 | NO. 20 |
| H | 0.124 | -0.330 | NO. 20 | Z | -0.096 | -0.203 | NO. 20 |
| J | -0.124 | -0.330 | NO. 20 | a | -0.193 | -0.117 | NO. 20 |
| K | -0.236 | -0.261 | NO. 20 | b | -0.228 | 0.008 | NO. 20 |
| L | -0.315 | -0.158 | NO. 20 | c | -0.181 | 0.129 | NO. 20 |
| M | -0.351 | -0.033 | NO. 20 | d | -0.084 | 0.217 | NO. 20 |
| N | -0.340 | 0.093 | NO. 20 | e | 0.000 | 0.072 | NO. 16 |
| P | -0.282 | 0.210 | NO. 20 | f | 0.069 | -0.076 | NO. 20 |
| R | -0.186 | 0.299 | NO. 20 | g | -0.069 | -0.076 | NO. 20 |

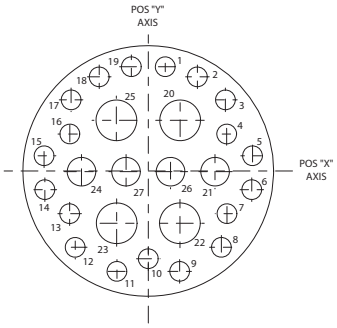
# PCB Footprints: Combo



Mating face of pin insert shown (socket will be opposite)

21-29

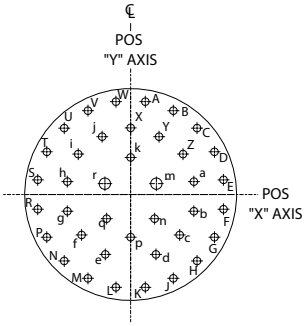
4X #12
4X #16
19X #20




| I.D. NO. | LOCATION X | LOCATION Y | GAGE | I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|---|---|---|---|
| 1 | +.067 | +.412 | NO. 20 | 15 | -0.412 | +.060 | NO. 20 |
| 2 | +.194 | +.372 | NO. 20 | 16 | -0.310 | +.146 | NO. 20 |
| 3 | +.305 | +.281 | NO. 20 | 17 | -0.305 | +.281 | NO. 20 |
| 4 | +.310 | +.146 | NO. 20 | 18 | -0.194 | +.372 | NO. 20 |
| 5 | +.412 | +.060 | NO. 20 | 19 | -0.067 | +.412 | NO. 20 |
| 6 | +.409 | -0.074 | NO. 20 | 20 | +.126 | +.200 | NO. 12 |
| 7 | +.311 | -0.169 | NO. 20 | 21 | +.264 | -0.003 | NO. 16 |
| 8 | +.289 | -0.302 | NO. 20 | 22 | +.125 | -0.207 | NO. 12 |
| 9 | +.124 | -0.397 | NO. 20 | 23 | -0.125 | -0.207 | NO. 12 |
| 10 | 0.000 | -0.347 | NO. 20 | 24 | -0.264 | -0.003 | NO. 16 |
| 11 | -124 | -0.397 | NO. 20 | 25 | -0.126 | +.200 | NO. 12 |
| 12 | -0.289 | -0.302 | NO. 20 | 26 | +.088 | -0.003 | NO. 16 |
| 13 | -0.311 | -0.169 | NO. 20 | 27 | -0.088 | -0.003 | NO. 16 |
| 14 | -0.409 | -0.074 | NO. 20 | | | | |

21-39

2X #16
37X #20




| I.D. NO. | LOCATION X | LOCATION Y | GAGE | I.D. NO. | LOCATION X | LOCATION Y | GAGE |
|---|---|---|---|---|---|---|---|
| A | 0.065 | 0.411 | NO. 20 | a | 0.280 | 0.057 | NO. 20 |
| B | 0.189 | 0.371 | NO. 20 | b | 0.280 | -0.074 | NO. 20 |
| C | 0.294 | 0.294 | NO. 20 | c | 0.217 | -0.189 | NO. 20 |
| D | 0.371 | 0.189 | NO. 20 | d | 0.112 | -0.265 | NO. 20 |
| E | 0.411 | 0.065 | NO. 20 | e | -0.112 | -0.265 | NO. 20 |
| F | 0.411 | -0.065 | NO. 20 | f | -0.217 | -0.189 | NO. 20 |
| G | 0.371 | -0.189 | NO. 20 | g | -0.280 | -0.074 | NO. 20 |
| H | 0.294 | -0.294 | NO. 20 | h | -0.280 | 0.057 | NO. 20 |
| J | 0.189 | -0.371 | NO. 20 | i | -0.232 | 0.179 | NO. 20 |
| K | 0.065 | -0.411 | NO. 20 | j | -0.126 | 0.256 | NO. 20 |
| L | -0.065 | -0.411 | NO. 20 | k | 0 | 0.164 | NO. 20 |
| M | -0.189 | -0.371 | NO. 20 | m | 0.114 | 0.048 | NO. 16 |
| N | -0.294 | -0.294 | NO. 20 | n | 0.106 | -0.107 | NO. 20 |
| P | -0.371 | -0.189 | NO. 20 | p | 0 | -0.189 | NO. 20 |
| R | -0.411 | -0.065 | NO. 20 | q | -0.106 | -0.107 | NO. 20 |
| S | -0.411 | 0.065 | NO. 20 | r | -0.114 | 0.048 | NO. 16 |
| T | -0.371 | 0.189 | NO. 20 | | | | |
| U | -0.294 | 0.294 | NO. 20 | | | | |
| V | -0.189 | 0.371 | NO. 20 | | | | |
| W | -0.065 | 0.411 | NO. 20 | | | | |
| X | 0 | 0.295 | NO. 20 | | | | |
| Y | 0.126 | 0.256 | NO. 20 | | | | |
| Z | 0.232 | 0.179 | NO. 20 | | | | |

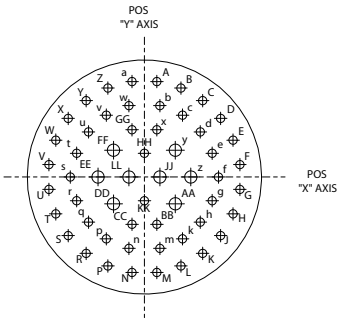
# PCB Footprints: Combo



Mating face of pin insert shown (socket will be opposite)

25-4

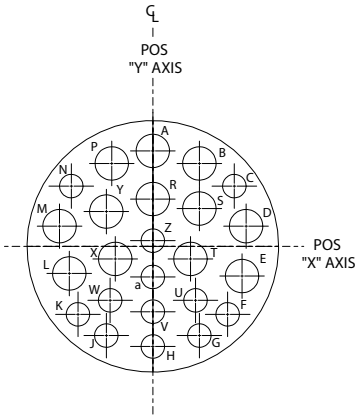
8X #16
48X #20




| I.D. NO. | LOCATION | | GAGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | 0.069 | 0.531 | NO. 20 | f | 0.412 | 0.000 | NO. 20 |
| B | 0.203 | 0.495 | NO. 20 | g | 0.377 | -0.132 | NO. 20 |
| C | 0.324 | 0.425 | NO. 20 | h | 0.311 | -0.251 | NO. 20 |
| D | 0.424 | 0.326 | NO. 20 | k | 0.212 | -0.344 | NO. 20 |
| E | 0.493 | 0.205 | NO. 20 | m | 0.086 | -0.397 | NO. 20 |
| F | 0.531 | 0.069 | NO. 20 | n | -0.086 | -0.397 | NO. 20 |
| G | 0.531 | -0.069 | NO. 20 | p | -0.212 | -0.344 | NO. 20 |
| H | 0.493 | -0.205 | NO. 20 | q | -0.311 | -0.251 | NO. 20 |
| J | 0.424 | -0.326 | NO. 20 | r | -0.377 | -0.132 | NO. 20 |
| K | 0.324 | -0.425 | NO. 20 | s | -0.412 | 0.000 | NO. 20 |
| L | 0.203 | -0.495 | NO. 20 | t | -0.377 | 0.132 | NO. 20 |
| M | 0.069 | -0.531 | NO. 20 | u | -0.311 | 0.251 | NO. 20 |
| N | -0.069 | -0.531 | NO. 20 | v | -0.212 | 0.344 | NO. 20 |
| P | -0.203 | -0.495 | NO. 20 | w | -0.086 | 0.397 | NO. 20 |
| R | -0.324 | -0.425 | NO. 20 | x | 0.069 | 0.263 | NO. 20 |
| S | -0.424 | -0.326 | NO. 20 | y | 0.172 | 0.149 | NO. 20 |
| T | -0.493 | -0.205 | NO. 20 | z | 0.258 | 0.000 | NO. 20 |
| U | -0.531 | -0.069 | NO. 20 | AA | 0.172 | -0.149 | NO. 16 |
| V | -0.531 | 0.069 | NO. 20 | BB | 0.069 | -0.263 | NO. 16 |
| W | -0.493 | 0.205 | NO. 20 | CC | -0.069 | -0.263 | NO. 16 |
| X | -0.424 | 0.326 | NO. 20 | DD | -0.172 | -0.149 | NO. 16 |
| Y | -0.324 | 0.425 | NO. 20 | EE | -0.258 | 0.000 | NO. 16 |
| Z | -0.203 | 0.495 | NO. 20 | FF | -0.172 | 0.149 | NO. 16 |
| a | -0.069 | 0.531 | NO. 20 | GG | -0.069 | 0.263 | NO. 16 |
| b | 0.086 | 0.397 | NO. 20 | HH | 0.000 | 0.132 | NO. 16 |
| c | 0.212 | 0.344 | NO. 20 | JJ | 0.086 | 0.000 | NO. 16 |
| d | 0.311 | 0.251 | NO. 20 | KK | 0.000 | -0.132 | NO. 16 |
| e | 0.377 | 0.132 | NO. 20 | LL | -0.086 | 0.000 | NO. 16 |

25-24

12X #16
12X #12




| I.D. NO. | LOCATION | | GAGE | I.D. NO. | LOCATION | | GAGE |
|---|---|---|---|---|---|---|---|
| | X | Y | | | X | Y | |
| A | +.000 | +.472 | NO. 12 | N | -.403 | +.298 | NO. 16 |
| B | +.230 | +.410 | NO. 12 | P | -.230 | +.410 | NO. 12 |
| C | +.403 | +.298 | NO. 16 | R | +.000 | +.234 | NO. 12 |
| D | +.461 | +.100 | NO. 12 | S | +.230 | +.172 | NO. 12 |
| E | +.413 | -.134 | NO. 12 | T | +.186 | -.062 | NO. 12 |
| F | +.370 | -.336 | NO. 16 | U | +.211 | -.267 | NO. 16 |
| G | +.230 | -.441 | NO. 16 | V | +.000 | -.323 | NO. 16 |
| H | +.000 | -.495 | NO. 16 | W | -.211 | -.267 | NO. 16 |
| J | -.230 | -.441 | NO. 16 | X | -.186 | -.062 | NO. 12 |
| K | -.370 | -.336 | NO. 16 | Y | -.230 | +.172 | NO. 12 |
| L | -.413 | -.134 | NO. 16 | Z | +.000 | +.028 | NO. 16 |
| M | -.461 | +.100 | NO. 12 | a | +.000 | -.151 | NO. 16 |

# PCB Footprints: Combo

PCB FOOTPRINTS

Mating face of pin insert shown (socket will be opposite)

25-43

20X #16
23X #20