



## CeeLok FAS-X Connectors

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THE HIGH-SPEED SOLUTION FOR 10G ETHERNET DATA DELIVERY  
USING RUGGED, MIL-SPEC COMPONENTS



## The high-performance, rugged solution for high-speed



CeeLok FAS-X connectors with industry proven AS39029 contacts were designed for rugged environments and provide reliable, consistent high-speed performance.

RJ45 in M38999 connectors are much larger than the CeeLok FAS-X connector (shell size 19 versus shell size 11). Additionally, the insulation displacement crimp technology may be unsuitable for use in certain harsh environments for which the M39029 crimp contacts used in the CeeLok FAS-X connector were intentionally designed.

### RUGGED

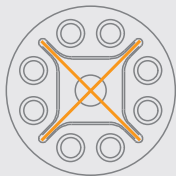
- MIL-DTL-32546.1 compliant
- Zero bit error rate
- Proven AS39029 crimp contacts
- Uses 38999-style shell

### FAST AND QUIET

- Gigabit or 10 Gigabit data delivery
- Excellent impedance matching and virtually no crosstalk
- Size 25 shell supports up to four Ethernet channels

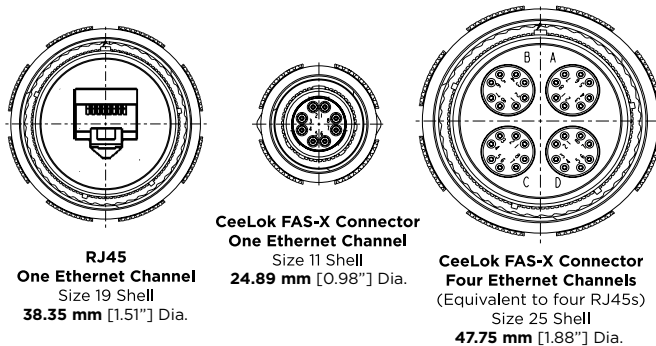
### HIGH PERFORMANCE

- Designed for use in rugged environments
- Ideal choice for 10G Ethernet, IEEE 1394, USB 2.0 and other high-speed protocols
- Optimized shielding arrangement for superior signal integrity



### CONVENIENT

- Fast field assembly, termination and repair
- Available with aluminum or composite shells with a variety of finishes
- Install/repair using standard insertion/removal and crimping tools
- Range of inserts available for Size 25 shell for other connectivity needs



## Performance Characteristics

### APPLICATIONS

- Military and Aerospace High-Speed Networking
- Gigabit Ethernet and 10G Ethernet Networks
- IEEE 1394b I/O
- Fibre Channel Networks
- Modular D38999

### MECHANICAL/ENVIRONMENTAL

- **Temperature Rating:** -65°C to +200°C
- **Mating Cycles (Min.):** 500
- **Plug Diameter:** 0.984" and 1.889" (24.99 mm and 47.98 mm)
- **Sealing IP Rating:** IP67
- **Sealing Altitude Immersion:** 50,000'

### ELECTRICAL DATA

- **Dielectric Withstanding Voltage:** 1300 VAC
- **Contact Current Rating (Amps/Contact):** 5

### MATERIALS

- **Shells:** Aluminum or composite, nickel plated
- **Contact Finish:** Gold

### STANDARDS AND TEST REPORTS

- **TE Qualification Test Reports:** 10065 and 20101203
- **Engineering Test Report:** EA20180297T Rev D
- **Military Specification:** MIL-DTL-32546A

# CeeLok FAS-X Connectors

## Superior Signal Integrity at Gigabit Rates

### Superior Impedance Matching

CeeLok FAS-X connectors are designed to maintain a highly matched 100-ohm impedance, with superior signal integrity.

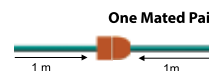
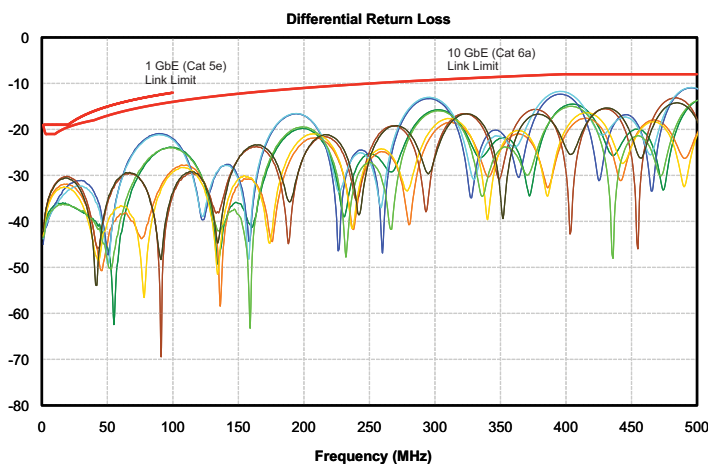
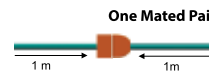
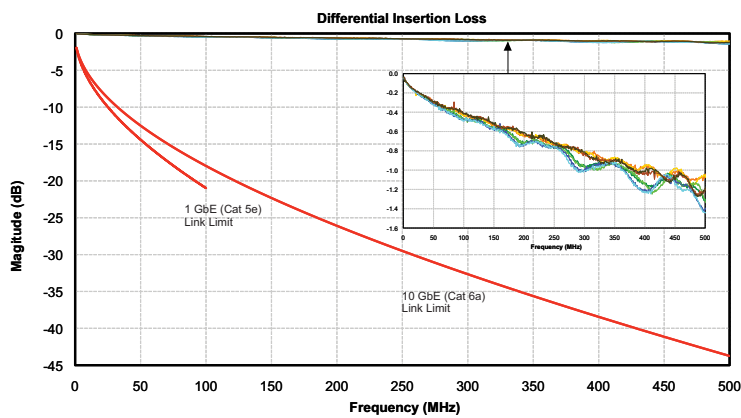
### More High-Frequency Headroom

The design and close impedance matching of the CeeLok FAS-X connector gives you more performance margin to tolerate noisy environments that are sensitive to harmful interference.

### Zero Bit Error Rate (BER) under Rugged Testing

The CeeLok FAS-X connector was tested by TE for bit errors for a high speed signal (1.0625 Gb/s) while simultaneously being subjected to random vibration and temperature cycling between -65°C and +200°C. No bit errors were detected.

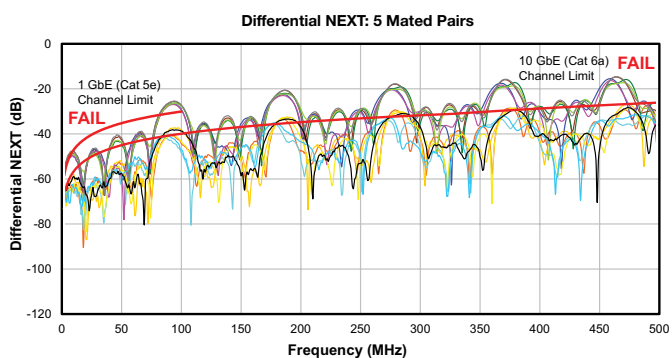
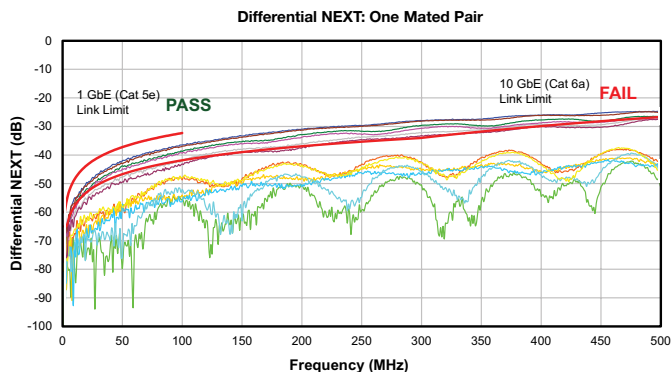
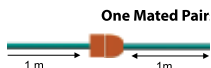
For more information, request Test Reports 10065 and 20101203.



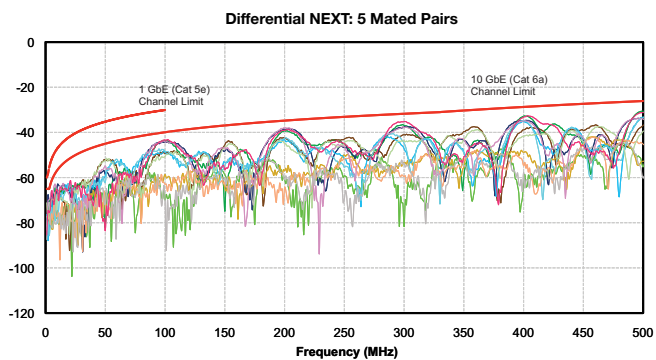
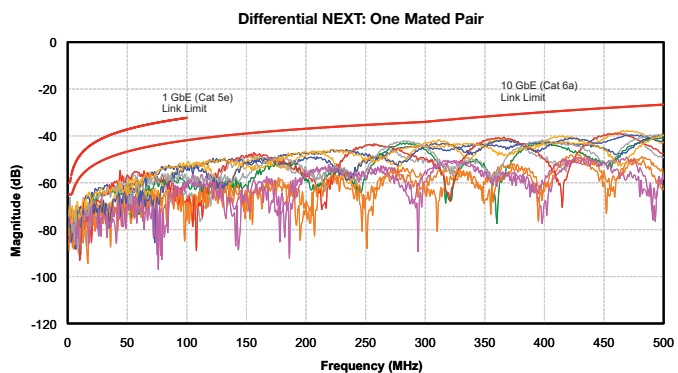
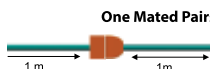
# CeeLok FAS-X Connectors

## Differential NEXT

D38999 Size 11 Connector  
MOD Def Standard 23-04 Pinout



## CeeLok FAS-X Connector



# CeeLok FAS-X Connectors

## Mil Connectors

### ORDERING INFORMATION

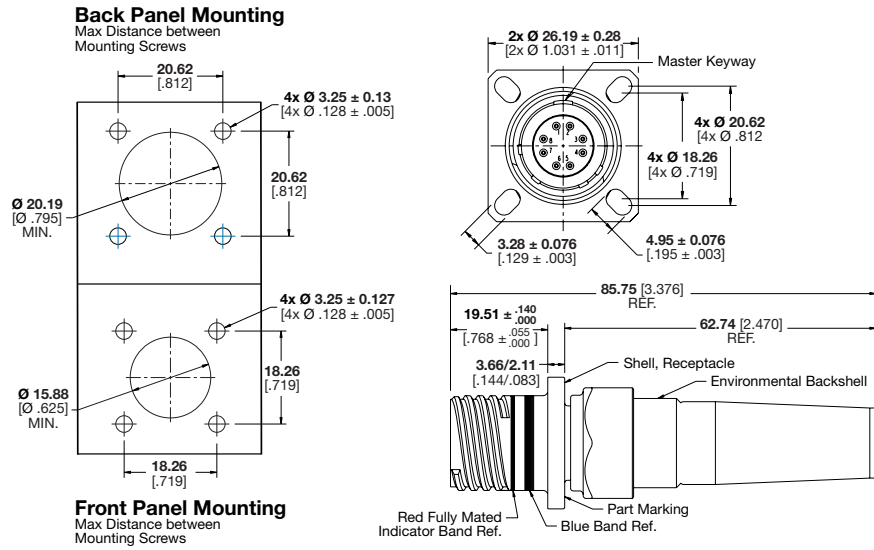
| Part Numbering System                     | <u>CFX20</u>   | <u>J</u> | <u>2532</u> | <u>P</u> | <u>Z</u> | <u>N</u> | <u>xxx</u> |
|---|--|----------|-------------|----------|----------|----------|------------|
| <b>GENERAL IDENTIFIER</b>                 |  |          |             |          |          |          |            |
| <b>CFX20</b>                              | Square Flange Receptacle (38999)                                 |          |             |          |          |          |            |
| <b>CFX21</b>                              | In-Line Receptacle (38999)                                       |          |             |          |          |          |            |
| <b>CFX24</b>                              | Jam Nut Receptacle (38999)                                       |          |             |          |          |          |            |
| <b>CFX26</b>                              | EMI/RFI Plug (38999)   |          |             |          |          |          |            |
| <b>CFX30</b>                              | Square Flange Receptacle (Braid Clamp Backshell)                 |          |             |          |          |          |            |
| <b>CFX34</b>                              | Jam Nut Receptacle (Braid Clamp Backshell)                       |          |             |          |          |          |            |
| <b>CFX36</b>                              | EMI/RFI Plug (Braid Clamp Backshell)                             |          |             |          |          |          |            |
| <b>CFX50</b>                              | Square Flange Receptacle (Push-Pull Lanyard) (81703)             |          |             |          |          |          |            |
| <b>CFX54</b>                              | Jam Nut Receptacle (Push-Pull Lanyard) (81703)                   |          |             |          |          |          |            |
| <b>CFX58</b>                              | Plug (Push-Pull Lanyard) (81703)                                 |          |             |          |          |          |            |
| <b>CFX59</b>                              | Rack-and-Panel Plug (Push-Pull Lanyard) (81703)                  |          |             |          |          |          |            |
| <b>CLASS (MATERIAL AND FINISH)</b>        |  |          |             |          |          |          |            |
| <b>M</b>                                  | Nickel-Plated Composite  |          |             |          |          |          |            |
| <b>J</b>                                  | O. D. Cadmium-Plated Composite                                   |          |             |          |          |          |            |
| <b>F</b>                                  | Nickel-Plated Aluminum   |          |             |          |          |          |            |
| <b>W</b>                                  | O. D. Cadmium-Plated Aluminum                                    |          |             |          |          |          |            |
| <b>A</b>                                  | Passivated Stainless Steel                                       |          |             |          |          |          |            |
| <b>T</b>                                  | PTFE Nickel-Plated Aluminum                                      |          |             |          |          |          |            |
| <b>Z</b>                                  | Black Zinc Nickel-Plated Aluminum                                |          |             |          |          |          |            |
| <b>SHELL SIZE AND CONTACT ARRANGEMENT</b> |  |          |             |          |          |          |            |
| <b>1108</b>                               | Single-Channel, Shell Size 11, 8 Size 22 Contacts                |          |             |          |          |          |            |
| <b>2532</b>                               | Quad-Channel, Shell Size 25, 32 Size 22 Contacts                 |          |             |          |          |          |            |
| <b>1104</b>                               | Single-Channel Fibre Channel, Shell Size 11                      |          |             |          |          |          |            |
| <b>2516</b>                               | Quad-Channel Fibre Channel, Shell Size 25                        |          |             |          |          |          |            |
| <b>2500</b>                               | Quad-Channel, Shell Size 25, No Inserts or Contacts              |          |             |          |          |          |            |
| <b>CONTACT TYPE AND PLATING</b>           |  |          |             |          |          |          |            |
| <b>P</b>                                  | Pin, Selective Gold Plating                                      |          |             |          |          |          |            |
| <b>S</b>                                  | Socket, Selective Gold Plating                                   |          |             |          |          |          |            |
| <b>F</b>                                  | Pin, Full Gold Plating   |          |             |          |          |          |            |
| <b>G</b>                                  | Socket, Full Gold Plating  |          |             |          |          |          |            |
| <b>H</b>                                  | Pin, High-Reliability Finish                                     |          |             |          |          |          |            |
| <b>J</b>                                  | Socket, High-Reliability Finish                                  |          |             |          |          |          |            |
| <b>A</b>                                  | No Pin Contacts Included   |          |             |          |          |          |            |
| <b>B</b>                                  | No Socket Contacts Included                                      |          |             |          |          |          |            |
| <b>TERMINATION TYPE</b>                   |  |          |             |          |          |          |            |
| <b>Z</b>                                  | Crimp  |          |             |          |          |          |            |
| <b>A</b>                                  | .232" Long Solder Tail (Consult TE for part number availability) |          |             |          |          |          |            |
| <b>KEYING POSITIONS</b>                   |  |          |             |          |          |          |            |
| <b>N, A, B, C, D, E</b>                   | (N is normal)  |          |             |          |          |          |            |
| <b>MODIFICATIONS</b>                      |  |          |             |          |          |          |            |
| <b>-1A</b>                                | Without Backshell  |          |             |          |          |          |            |
| <b>-1077</b>                              | Without Grommet (Shell Size 11 only)                             |          |             |          |          |          |            |

# CeeLok FAS-X Connectors

## Single-Channel D38999 Circular, Shell Size 11

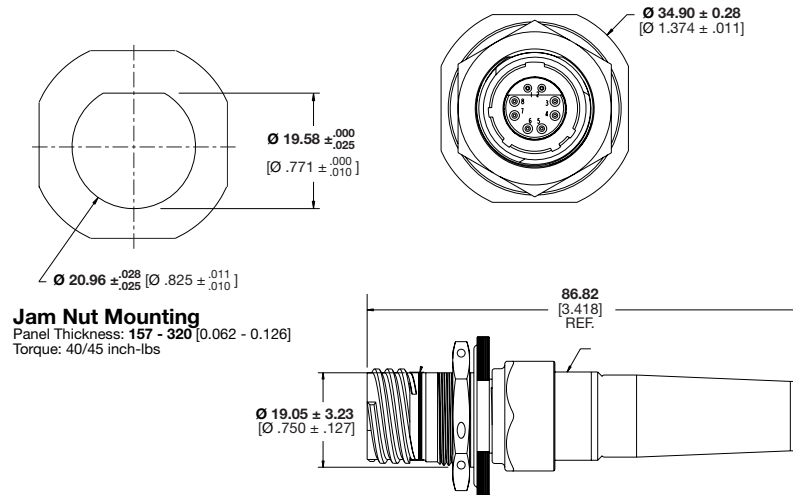
### Square Flange Receptacle

CFX20\*1108\*\*\*



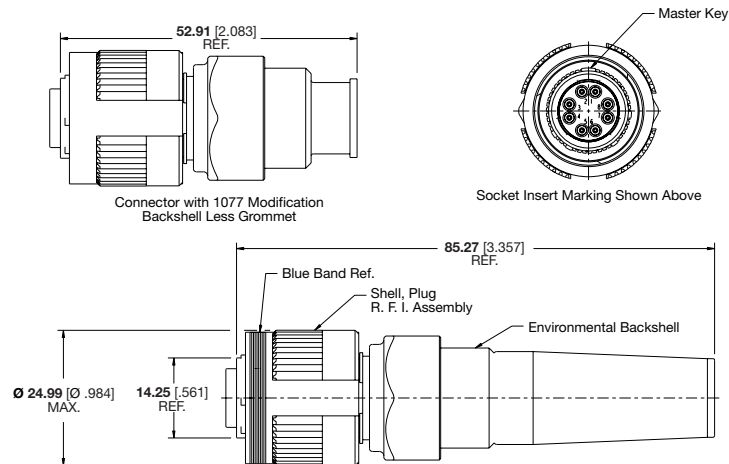
### Jam Nut Receptacle

CFX24\*1108\*\*\*



### Plug

CFX26\*1108\*\*\*

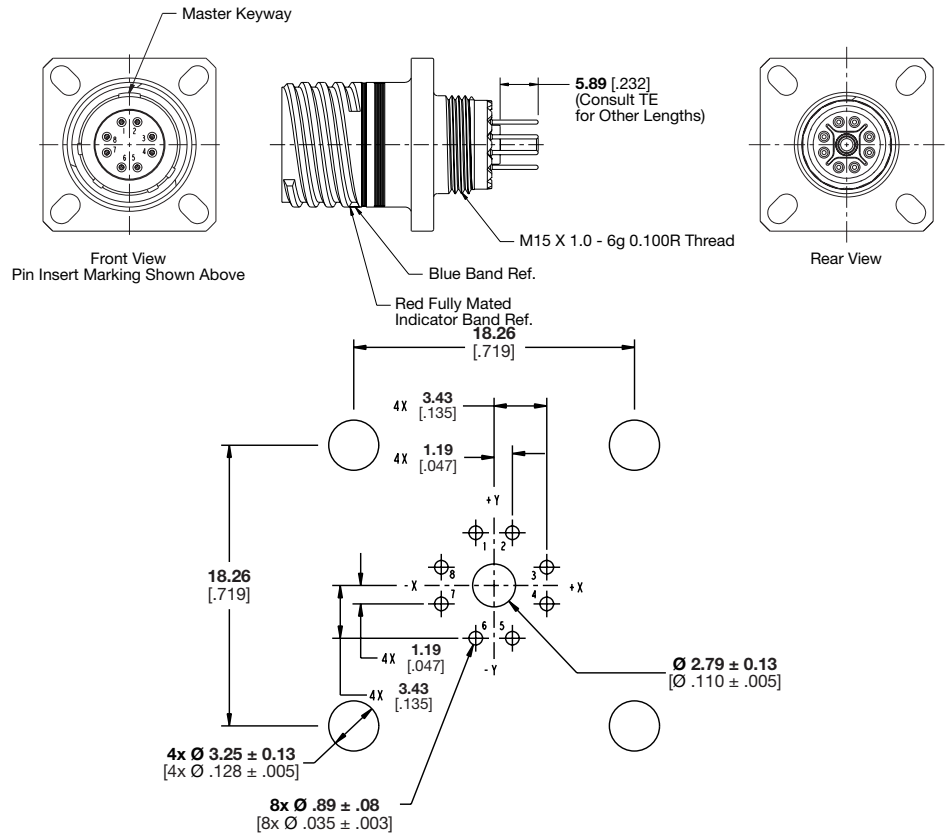


# CeeLok FAS-X Connectors

## Single-Channel D38999 Circular, Shell Size 11, PCB Mount

### Square Flange Receptacle

CFX20\*1108\*\*\*

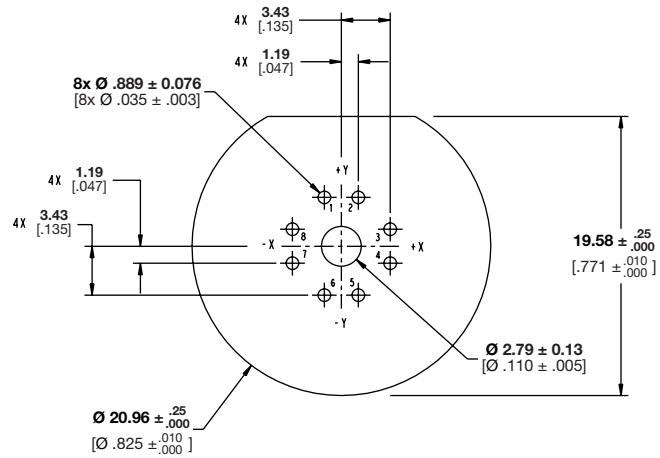
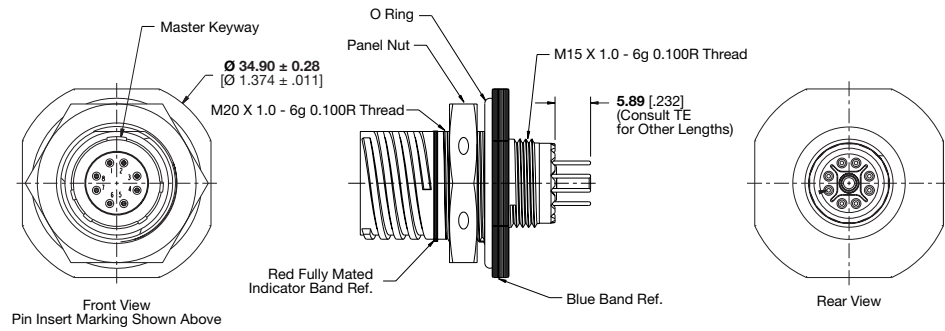


# CeeLok FAS-X Connectors

## Single-Channel D38999 Circular, Shell Size 11, PCB Mount

### Jam Nut Receptacle

CFX24\*1108\*\*\*



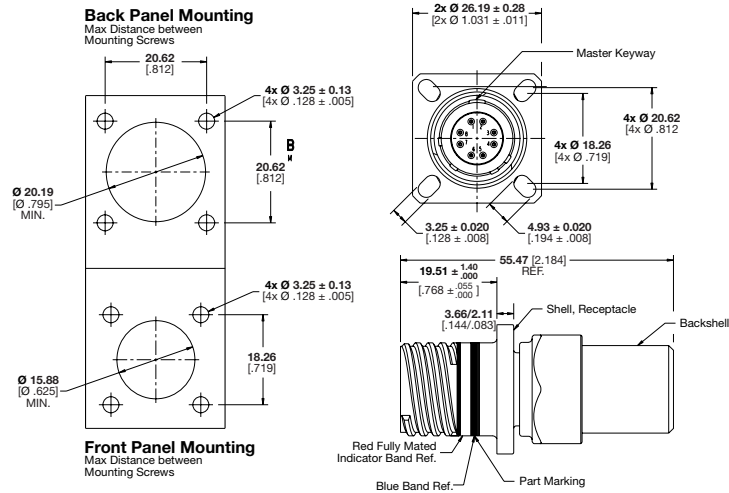


# CeeLok FAS-X Connectors

## Commercial Single-Channel Circular, Shell Size 11

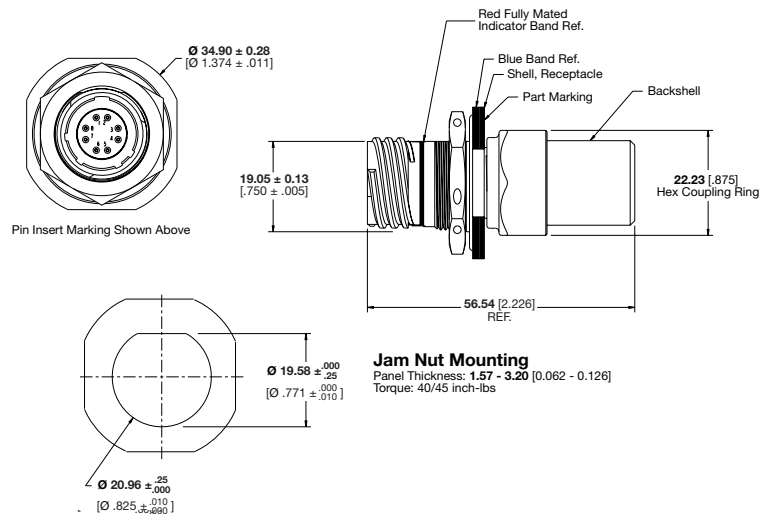
### Square Flange Receptacle with Braid Clamp Backshell

CFX30\*1108\*\*\*



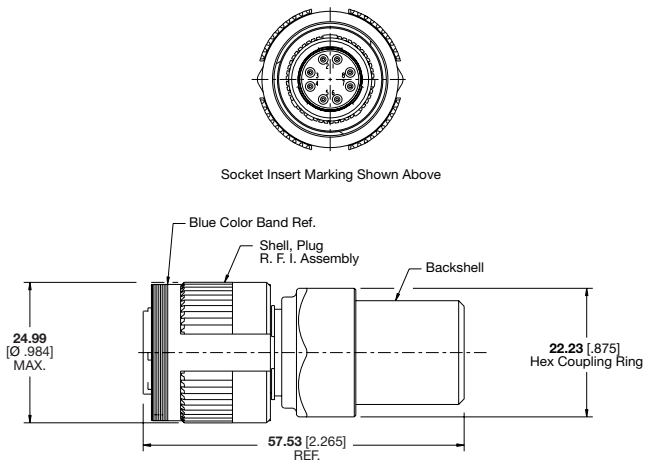
### Jam Nut Receptacle with Braid Clamp Backshell

CFX34\*1108\*\*\*



### EMI/RFI Plug with Braid Clamp Backshell

CFX36\*1108\*\*\*

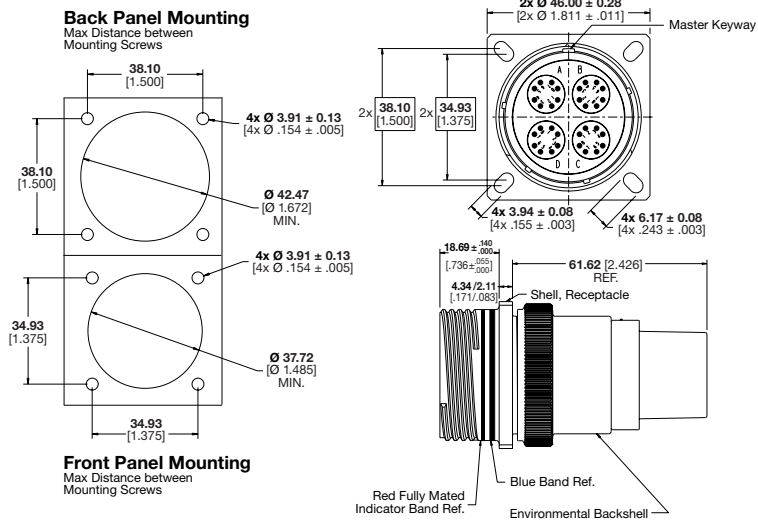


# CeeLok FAS-X Connectors

## Quad-Channel D38999 Circular, Shell Size 25

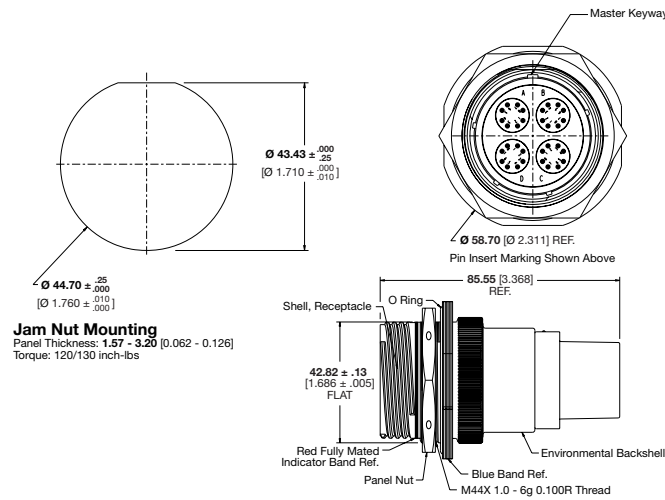
### Square Flange Receptacle

CFX20\*2532\*\*\*



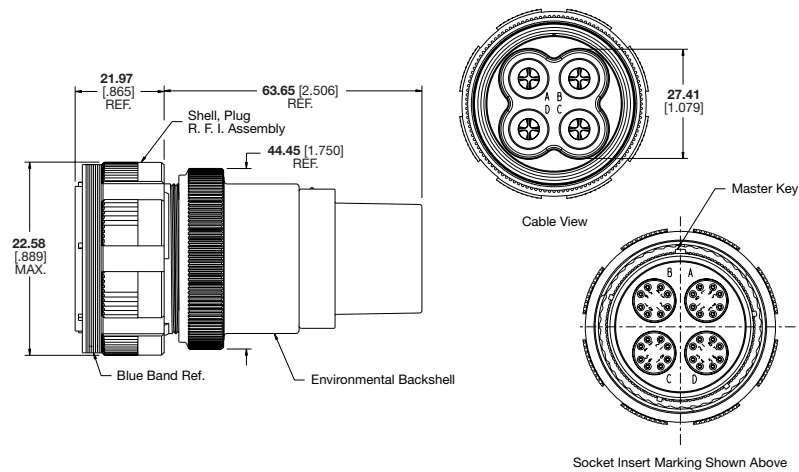
### Jam Nut Receptacle

CFX24\*2532\*\*\*



### Plug

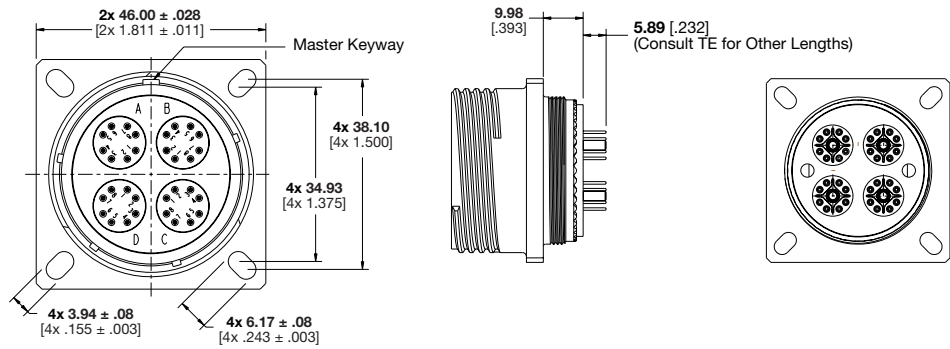
CFX26\*2532\*\*\*



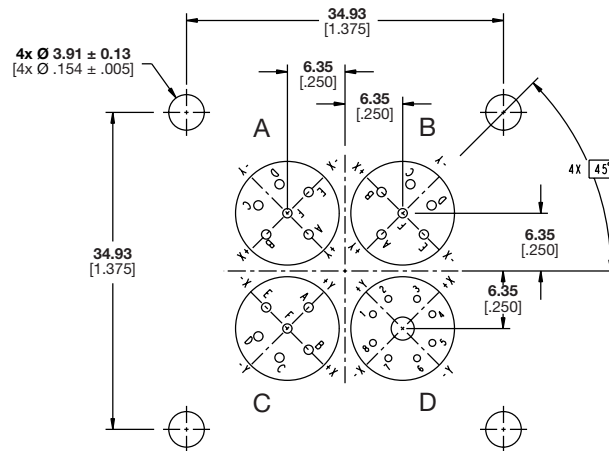
# CeeLok FAS-X Connectors

## Square Flange Receptacle

CFX20\*2532\*\*\*



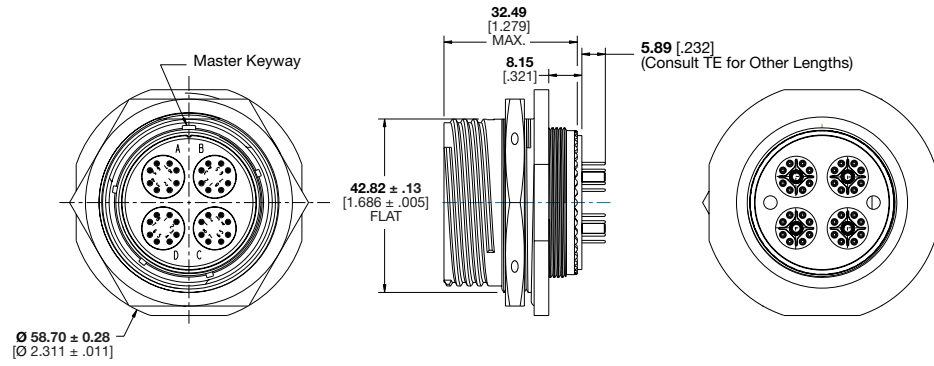
## PCB Layout



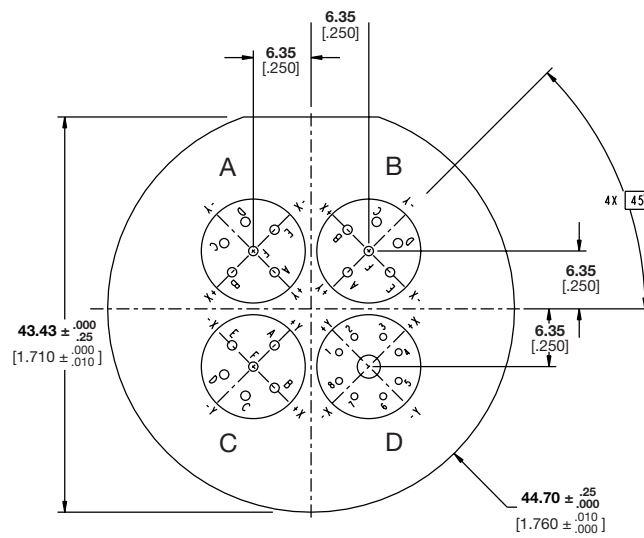
# CeeLok FAS-X Connectors

## Jam Nut Receptacle

CFX24\*2532\*\*\*



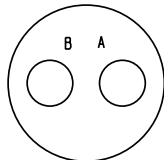
## PCB Layout



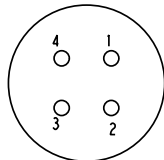
# CeeLok FAS-X Connectors

## CeeLok FAS-X Connector Modules

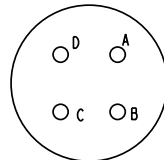
CeeLok FAS-X connectors are also available with a variety of modules to accommodate various counts of Size 22, 20, and 16 contacts in a Size 11 shell. Such capabilities allow convenient mixture of signal and power through the connectors.



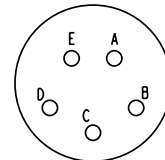
**1102**  
2 Size 16 Contacts



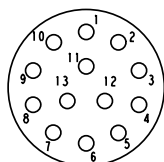
**11H4**  
4 Size 22 Contacts



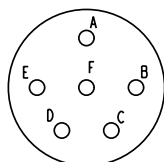
**1104**  
4 Size 20 Contacts



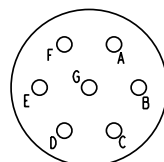
**1105**  
5 Size 20 Contacts



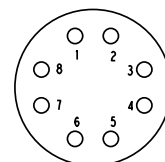
**1135**  
13 Size 22 Contacts



**1198**  
6 Size 20 Contacts



**1199**  
7 Size 20 Contacts



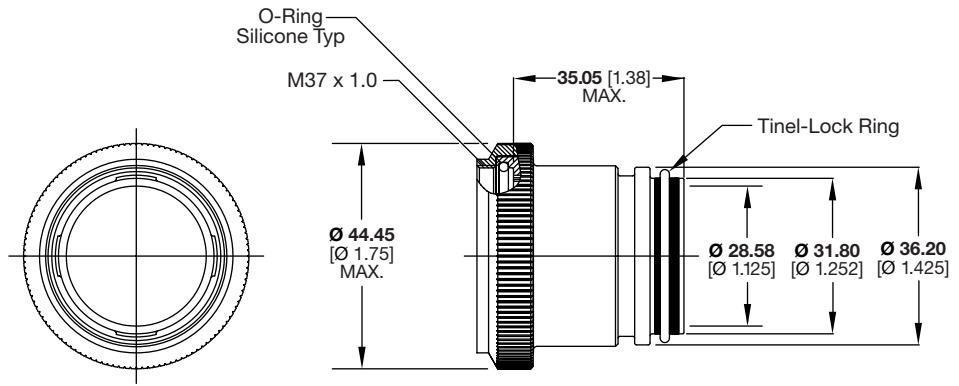
**11H8**  
8 Size 22 Contacts

|   |   |             |          |          |
|---|---|-------------|----------|----------|
|   | <b>MFX</b>  | <b>1105</b> | <b>P</b> | <b>Z</b> |
| <b>PRODUCT LINE</b>                         | _____   |             |          |          |
| <b>MFX</b>                                  | CeeLok FAS-X Connector Modules  |             |          |          |
| <b>MODULE SIZE (11)/CONTACT ARRANGEMENT</b> | _____   |             |          |          |
| <b>1102</b>                                 | 2 Size 16 Contacts  |             |          |          |
| <b>11H4</b>                                 | 4 Size 22 Contacts (High-Speed Insert Optimized for 150-Ohm Quad Cable)                 |             |          |          |
| <b>1104</b>                                 | 4 Size 20 Contacts  |             |          |          |
| <b>1105</b>                                 | 5 Size 20 Contacts  |             |          |          |
| <b>11H8</b>                                 | 8 Size 22 Contacts (High-Speed Insert Optimized for 4-Pair 100-Ohm Differential Cables) |             |          |          |
| <b>1135</b>                                 | 13 Size 22 Contacts   |             |          |          |
| <b>1198</b>                                 | 6 Size 20 Contacts  |             |          |          |
| <b>1199</b>                                 | 7 Size 20 Contacts  |             |          |          |
| <b>CONTACT PLATING</b>                      | _____   |             |          |          |
| <b>P</b>                                    | Pin, Localized Gold Finish  |             |          |          |
| <b>S</b>                                    | Socket, Localized Gold Finish   |             |          |          |
| <b>F</b>                                    | Pin, Full Gold Finish   |             |          |          |
| <b>G</b>                                    | Socket, Full Gold Finish  |             |          |          |
| <b>H</b>                                    | Pin, High-Reliability Finish  |             |          |          |
| <b>J</b>                                    | Socket, High-Reliability Finish   |             |          |          |
| <b>A</b>                                    | Less Pin  |             |          |          |
| <b>B</b>                                    | Less Socket   |             |          |          |
| <b>TERMINATION TYPE</b>                     | _____   |             |          |          |
| <b>Z</b>                                    | Crimp Contacts  |             |          |          |
| <b>A - Y</b>                                | Extended PCB Tail Contacts (Consult TE for Part Number Availability)                    |             |          |          |

# CeeLok FAS-X Connectors

## Adapters

Tinel-Lock backshell adapters are available to provide reliable braided shield termination using Tinel-Lock rings and accommodate a lipped heat-shrink boot.



**PRODUCT DESIGNATOR** TSX201 A X 00 - 24 18 B1

**TSX** Special Adapter

**MATERIAL CODE** A Aluminum Alloy

**PLATING CODE** X Nickel PTFE (See S-CH00-0157-002)

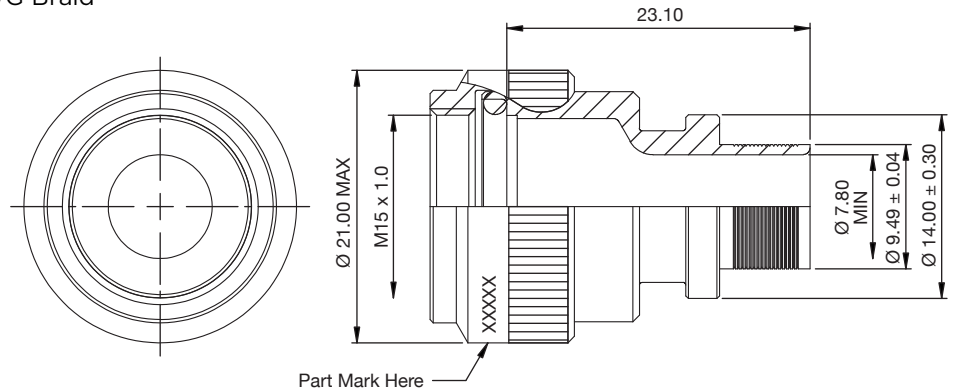
**COLOR** Non-Reflective

**BODY STYLE** 00 Straight

**ORDER NUMBER** \_\_\_\_\_

**ENTRY SIZE** \_\_\_\_\_

**TINEL-LOCK RING** B1 Dual Layer 36 AWG Braid or Single Layer 30 AWG Braid  
A1 Single Layer 36 AWG Braid



**SERIES** TSX201 A X 00 - 10 04 A1

**MATERIAL CODE** A Aluminum Alloy (Refer to CH00-0250-008)

**FINISH** X Nickel PTFE: Non-Reflective (Refer to CH00-0250-008)

**ANGLE - STRAIGHT** \_\_\_\_\_

**ORDER NUMBER** \_\_\_\_\_

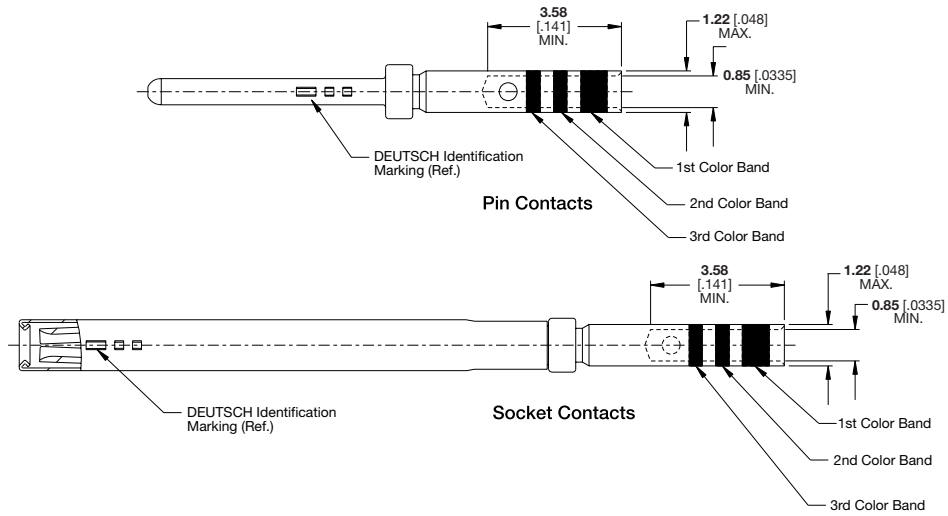
**ENTRY SIZE** \_\_\_\_\_

**RING OPTION** A1 To Suit Single Braid  
B1 To Suit Double Braid

# CeeLok FAS-X Connectors

## Size 22D Contacts

28 - 22 AWG wire  
 .160 to .190  
 recommended  
 strip length



| Type   | Military Part No. | TE DEUTSCH Part No.*   | Color Bands |        |        | Crimp Tool  |             |
|--------|-------------------|------------------------|-------------|--------|--------|-------------|-------------|
|        |                   |                        | 1st         | 2nd    | 3rd    | Basic Tool  | Positioner  |
| Pin    | AS39029/107-620   | 12331-22               | Blue        | Red    | Black  | M22520/2-01 | M22520/2-09 |
|        | AS39029/58-360    | 38941-22,<br>38941-22L | Blue        | Brown  | Yellow | M22520/7-01 | M22520/7-07 |
| Socket | AS39029/106-614   | 12333-22               | Orange      | Blue   | Black  | M22520/2-01 | M22520/2-07 |
|        | AS39029/56-348    | 38943-22,<br>38943-22L | Orange      | Yellow | Gray   | M22520/7-01 | M22520/7-05 |

\*12331-22 and 12333-22 are high-durability contacts rated for 1500 mating cycles.  
 38941-22x and 38943-22x are standard durability contacts rated for 500 mating cycles.  
 The L suffix indicates localized plating; otherwise plating is standard.

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SEACON | Rochester | DEUTSCH

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1-1773837-2 02/21

### CeeLok FAS-X Connectors

TE Connectivity  
Aerospace, Defense & Marine  
2900 Fulling Mill Road  
Middletown, PA 17057