CEELOK FAS-X CONNECTORS

THE HIGH SPEED SOLUTION FOR 10 GB/S DATA DELIVERY USING RUGGED, MIL-SPEC COMPONENTS

TE connectivity

DEUTSCH

CEELOK FAS-X CONNECTORS

The high-performance, rugged solution for high-speed

APPLICATIONS

- Supports major protocols:
  - Gigabit Ethernet and 10G Ethernet networks
 - IEEE 1394b I/O
  - Fibre Channel networks
  - Modular D38999

CONFIGURATIONS

- Single-Channel D38999 Style, Size 11
- Quad-Channel D38999 Style, Size 25
- Single-Channel Lanyard MIL-DTL-81703 Style
- Single-Channel Commercial D38999 Style

High-Performance Alternative to RJ45s

CeeLok FAS-X connectors with industry proven AS39029 contacts were designed for rugged environments and provide reliable, consistent high-speed performance.
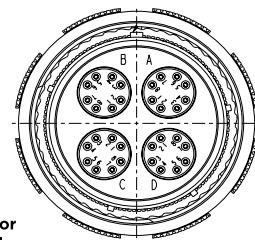
RJ45 in D38999 connectors are much larger than the CeeLok FAS-X connector (shell size 19 versus shell size 11). Additionally, the insulation displacement crimp technology may be unsuitable for use in certain harsh environments for which the M39029 crimp contacts used in the CeeLok FAS-X connector were intentionally designed.
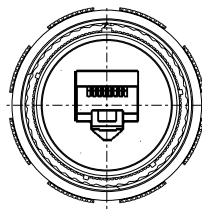
RJ45
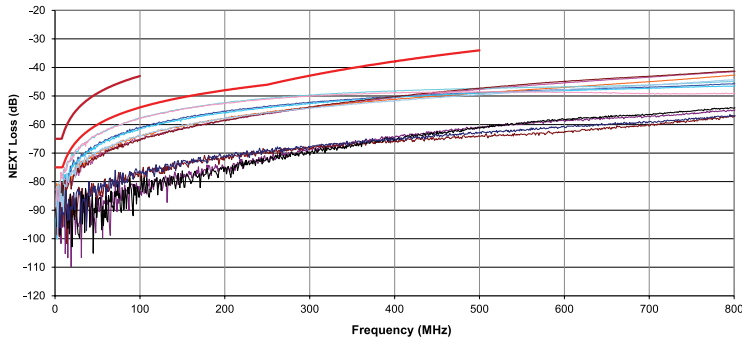**One Ethernet Channel**
Size 19 Shell
1.51" Dia.
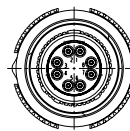
CeeLok FAS-X Connector
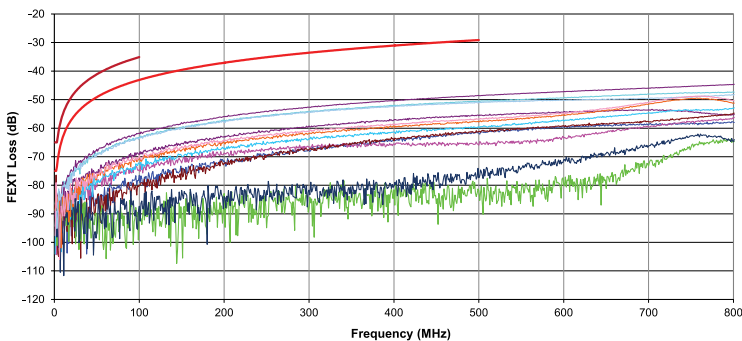**One Ethernet Channel**
Size 11 Shell
0.98" Dia.

CeeLok FAS-X Connector
Four Ethernet Channels
(Equivalent to four RJ45s)
Size 25 Shell
1.88" Dia.

HIGH-SPEED CONNECTIVITY

- Supports 10G Ethernet and other high-speed protocols
- Size 11 shells support one 10G Ethernet channel
- Size 25 shells support four 10GbE channels

DESIGN OPTIMIZED FOR SIGNAL INTEGRITY

- Patented shielding arrangement shields each pair through the connector to provide improved impedance matching and to eliminate crosstalk

CONVENIENT

- Uses standard crimp AS39029 contacts
- Allows fast field termination and repair, requiring only standard contact insertion/removal and crimping tools
- Available with aluminum or composite shells with a variety of finishes

FLEXIBLE

- Range of inserts for Size 25 shell to accommodate other connectivity needs

Superior Signal Integrity at Gigabit Rates

Near-End Crosstalk

NEXT Loss (dB) vs Frequency (MHz)

Far-End Crosstalk

FEXT Loss (dB) vs Frequency (MHz)

Insertion Loss

Insertion Loss (dB) vs Frequency (MHz)

Return Loss

Return Loss (dB) vs Frequency (MHz)
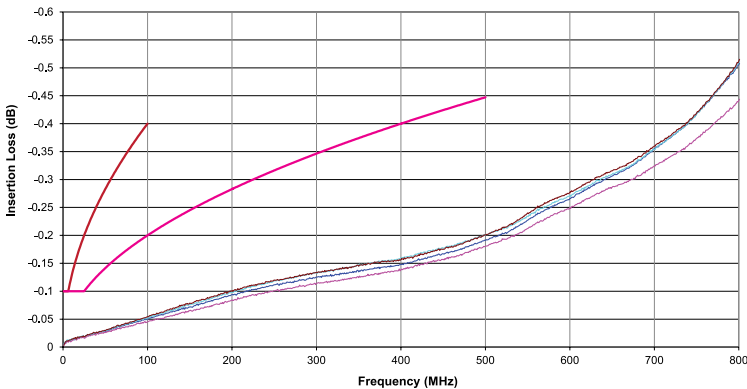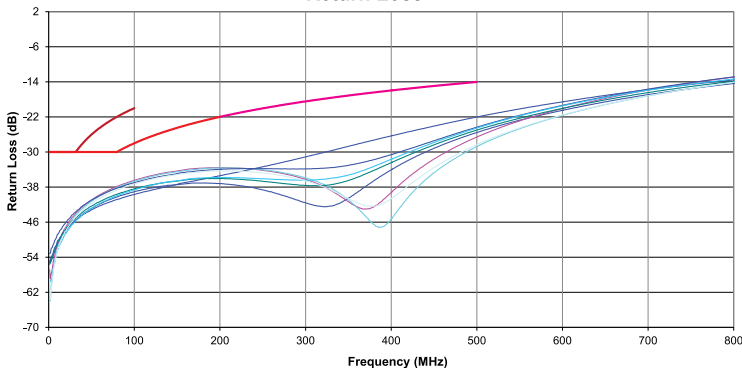
Superior Impedance Matching

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 Gigabit Ethernet 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.
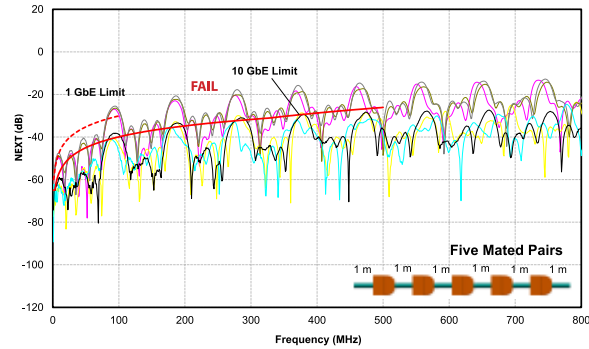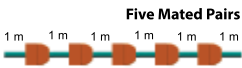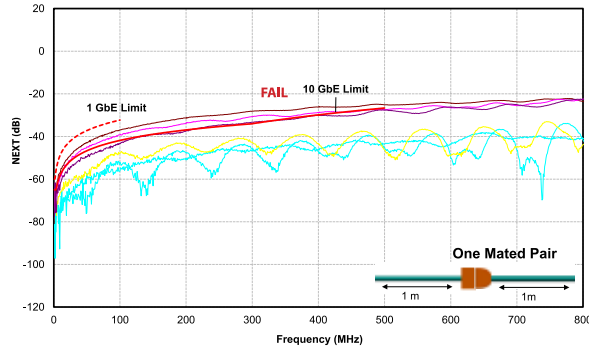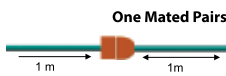
For more information, request Test Reports 10065 and 20101203.

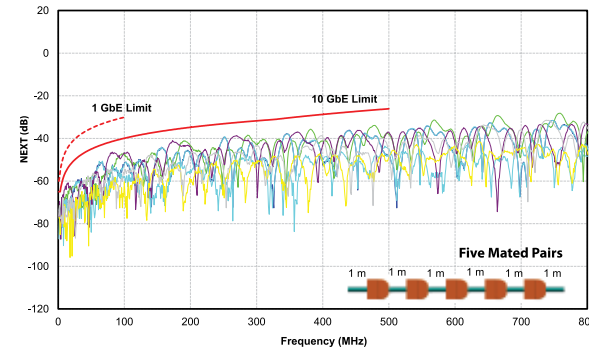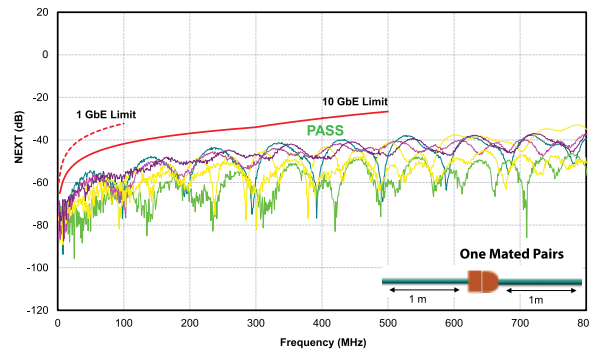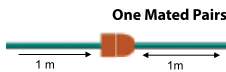### Signal Integrity Performance Above and Beyond 38999 Connectors

Optimized for high speed signaling, CeeLok FAS-X connectors help to offer performance beyond what is obtainable with popular pinouts used in standard D38999 connectors.

Differential NEXT

D38999 Size 11 Connector
MOD Def Standard 23-04 Pinout

One Mated Pairs

1 m ← → 1m

One Mated Pair

1 m ← → 1m

Five Mated Pairs

1 m   1 m   1 m   1 m   1 m   1 m

Five Mated Pairs

1 m   1 m   1 m   1 m   1 m   1 m

CeeLok FAS-X Connector

One Mated Pairs

1 m ← → 1m

One Mated Pairs

1 m ← → 1m

Five Mated Pairs

1 m   1 m   1 m   1 m   1 m   1 m

Five Mated Pairs

1 m   1 m   1 m   1 m   1 m   1 m

Connector Configuration Guide

CFX20	J	2532	P	Z	N	xxx

Modifications
-1A = Without Backshell
-1077 = Without Grommet

Keying Positions
N (normal), A, B, C, D, E for D38999 style
N (normal) only for 81703 style

Termination Type
Z = Crimp
A = .232" Long Solder Tail (Contact TE for other tail lengths)

Contact Type and Plating
P = Pin, Selective Gold Plating
S = Socket, Selective Gold Plating
F = Pin, Full Gold Plating
G = Socket, Full Gold Plating
H = Pin, High-Reliability Finish
J = Socket, High-Reliability Finish
A = No Pin Contacts Included
B = No Socket Contacts Included

Shell Size and Contact Arrangement
1108 = Single-Channel, Shell Size 11, 8 Size 22 Contacts
2532 = Quad-Channel, Shell Size 25, 32 Size 22 Contacts
1104 = Single-Channel Fibre Channel, Shell Size 11
2516 = Quad-Channel Fibre Channel, Shell Size 25
2500 = Quad-Channel, Shell Size 25, No Inserts or Contacts

Class (Material and Finish)
M = Nickel-Plated Composite
J = O.D. Cadmium-Plated Composite
F = Nickel-Plated Aluminum
W = O.D. Cadmium-Plated Aluminum
A = Passivated Stainless Steel
T = PTFE Nickel-Plated Aluminum
Z = Black Zinc Nickel-Plated Aluminum

General Identifier
CFX20 = Square Flange Receptacle (38999)
CFX21 = In-Line Receptacle (38999)
CFX24 = Jam Nut Receptacle (38999)
CFX26 = EMI/RFI Plug (38999)
CFX30 = Square Flange Receptacle (Braid Clamp Backshell)
CFX34 = Jam Nut Receptacle (Braid Clamp Backshell)
CFX36 = EMI/RFI Plug (Braid Clamp Backshell)
CFX50 = Square Flange Receptacle (Push-Pull Lanyard) (81703)
CFX54 = Jam Nut Receptacle (Push-Pull Lanyard) (81703)
CFX58 = Plug (Push-Pull Lanyard) (81703)
CFX59 = Rack-and-Panel Plug (Push-Pull Lanyard) (81703)

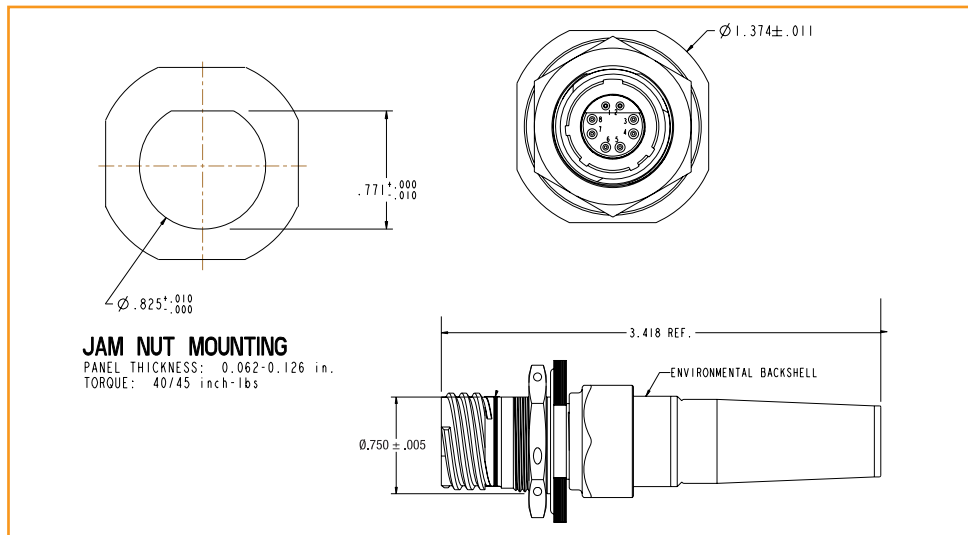## SINGLE-CHANNEL D38999 CIRCULAR, SHELL SIZE 11

Square Flange Receptacle
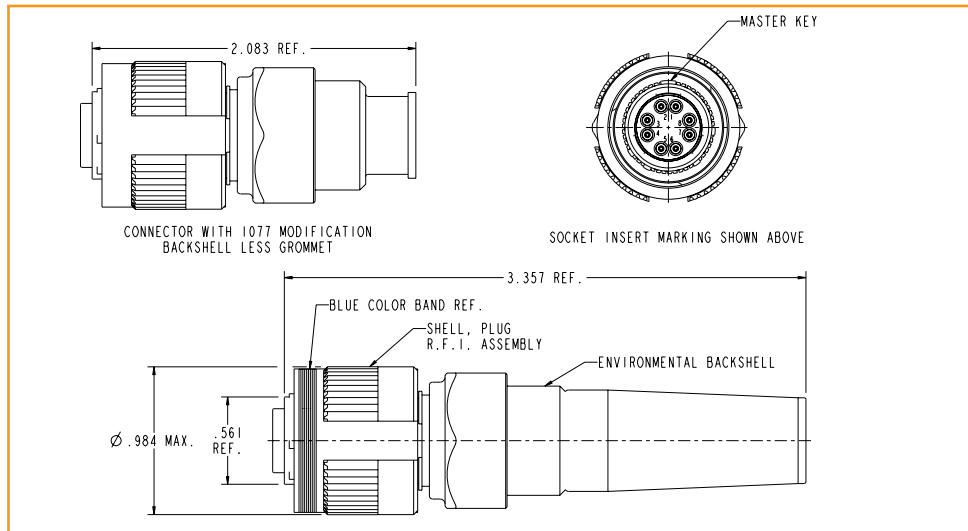
CFX20*1108***

Jam Nut Receptacle

CFX24*1108***

Plug

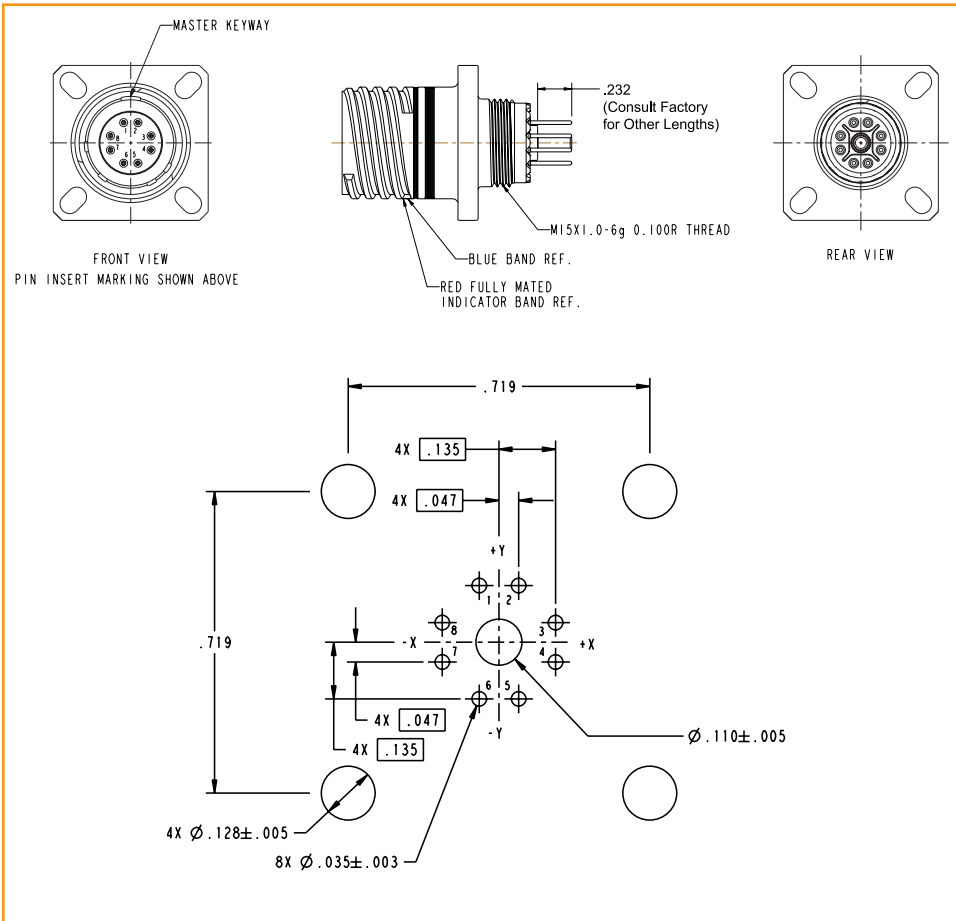CFX26*1108***

SINGLE-CHANNEL D38999 CIRCULAR, SHELL SIZE 11, PCB MOUNT
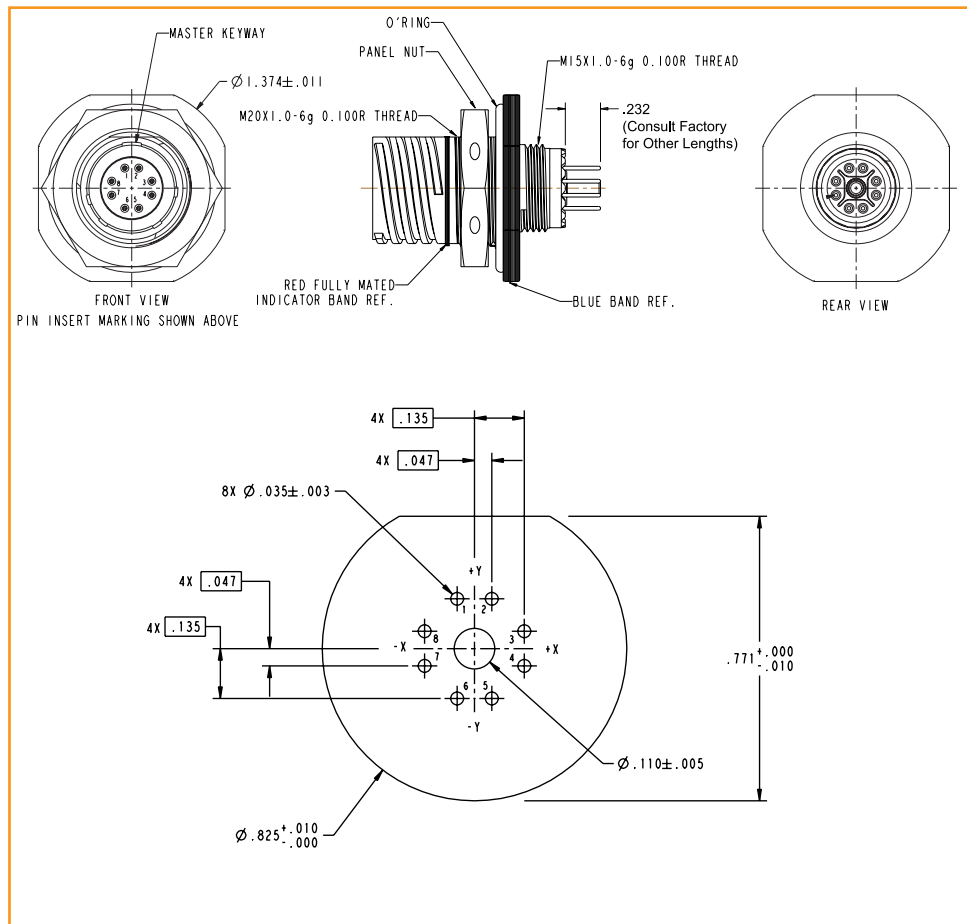
Square Flange Receptacle

CFX20*1108***

MASTER KEYWAY

FRONT VIEW
PIN INSERT MARKING SHOWN ABOVE

.232
(Consult Factory
for Other Lengths)

M15X1.0-6g 0.100R THREAD

BLUE BAND REF.

RED FULLY MATED
INDICATOR BAND REF.

REAR VIEW

.719

4X .135

4X .047

+Y

-X

+X

-Y

4X .047

4X .135

.719

∅.110±.005

4X ∅.128±.005

8X ∅.035±.003

SINGLE-CHANNEL D38999 CIRCULAR, SHELL SIZE 11, PCB MOUNT

Jam Nut Receptacle

CFX24*1108***

COMMERCIAL SINGLE-CHANNEL CIRCULAR, SHELL SIZE 11
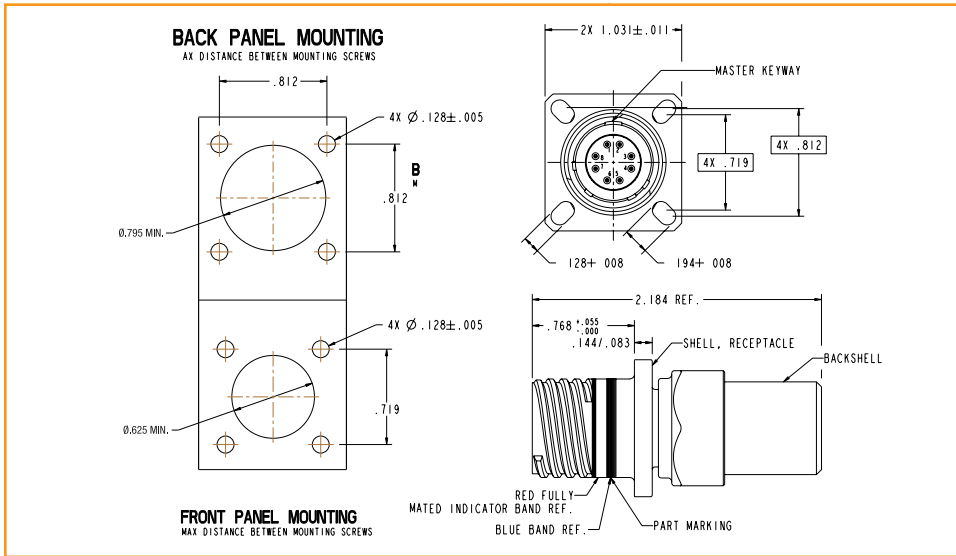
Square Flange Receptacle with Braid Clamp Backshell

CFX30*1108***
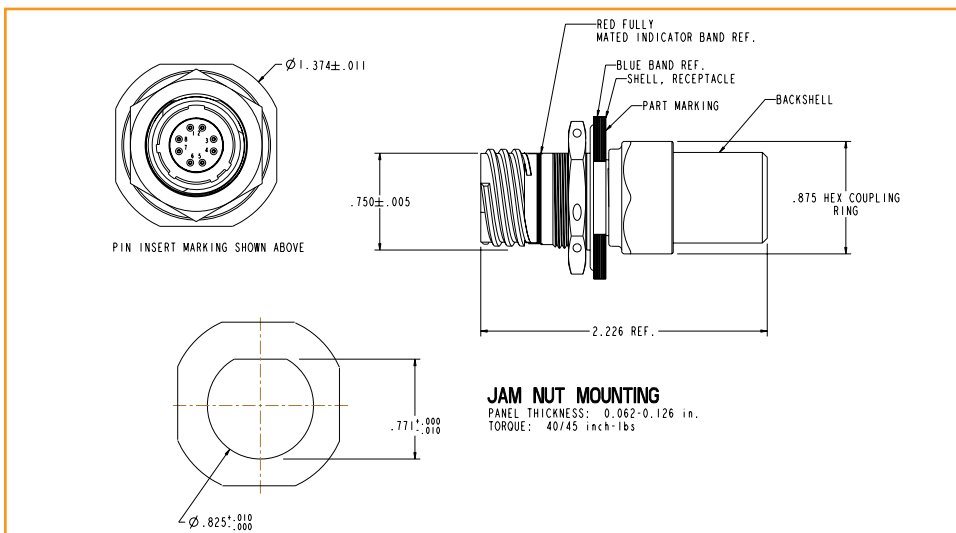
Jam Nut Receptacle with Braid Clamp Backshell

CFX34*1108***
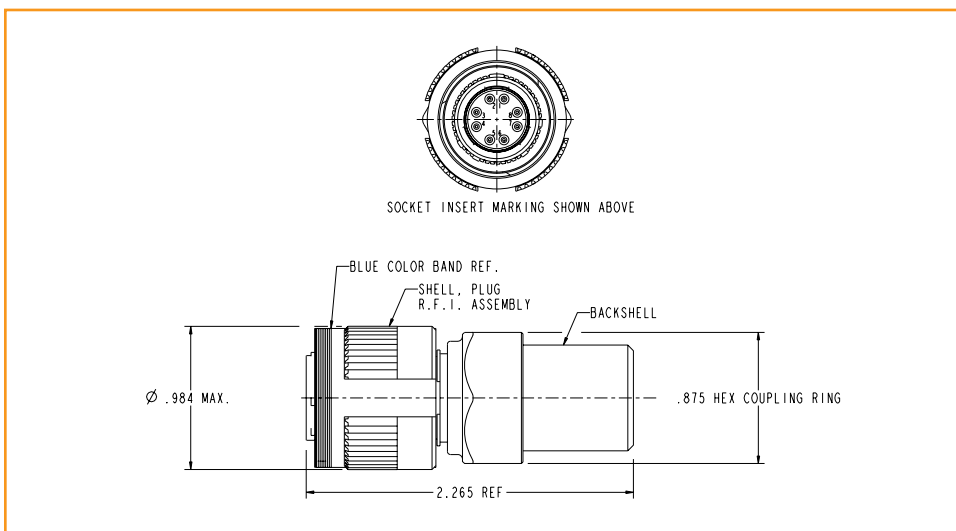
EMI/RFI Plug with Braid Clamp Backshell

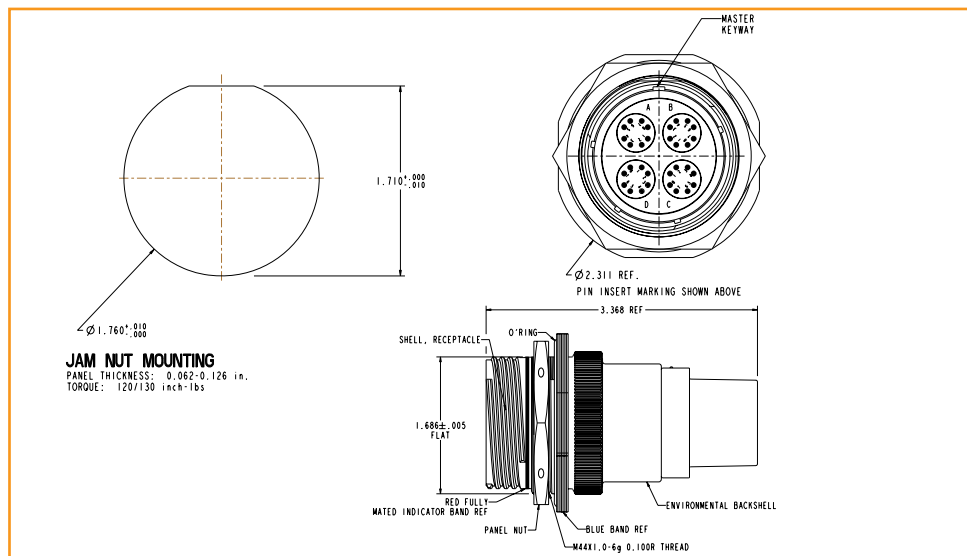CFX36*1108***

QUAD-CHANNEL D38999 CONNECTORS, SHELL SIZE 25
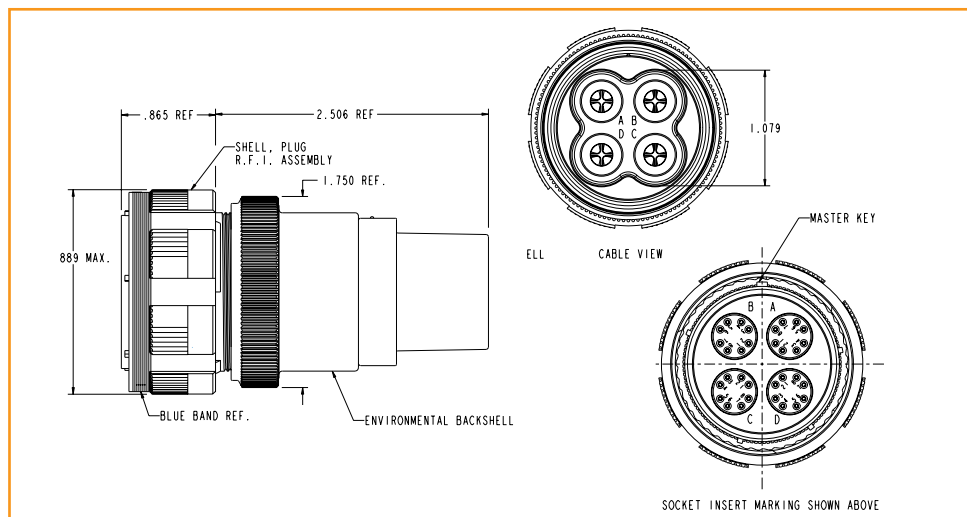
Square Flange Receptacle
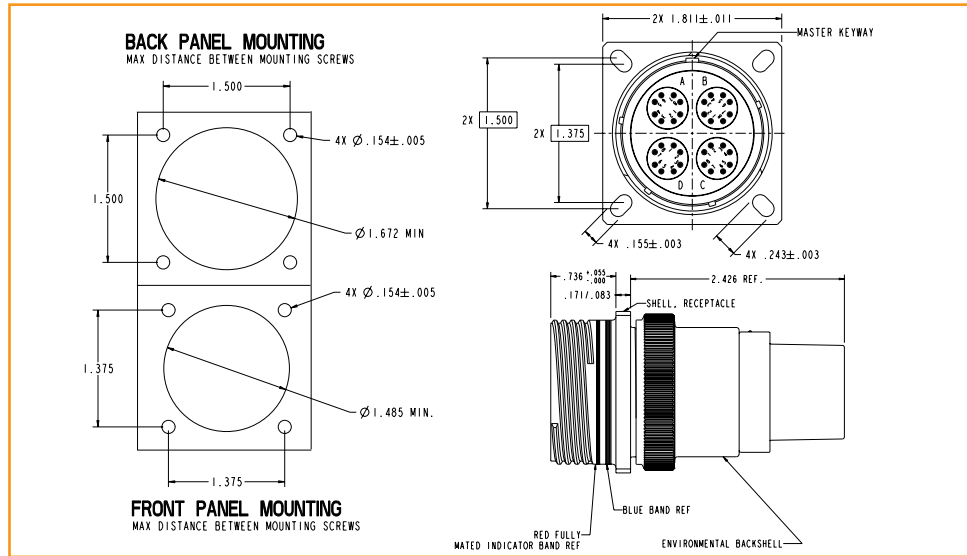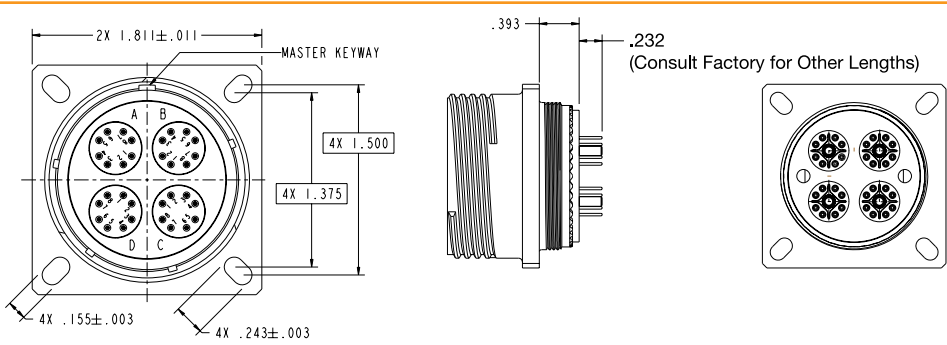
CFX20*2532***

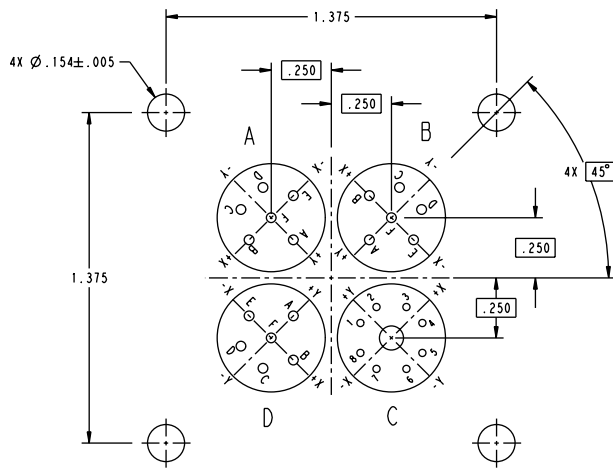### Jam Nut Receptacle

CFX24*2532***

Plug

CFX26*2532***

Square Flange Receptacle

CFX20*2532***

PCB Layout

Jam Nut Receptacle

CFX24*2532***

.232
(Consult Factory for Other Lengths)

PCB Layout
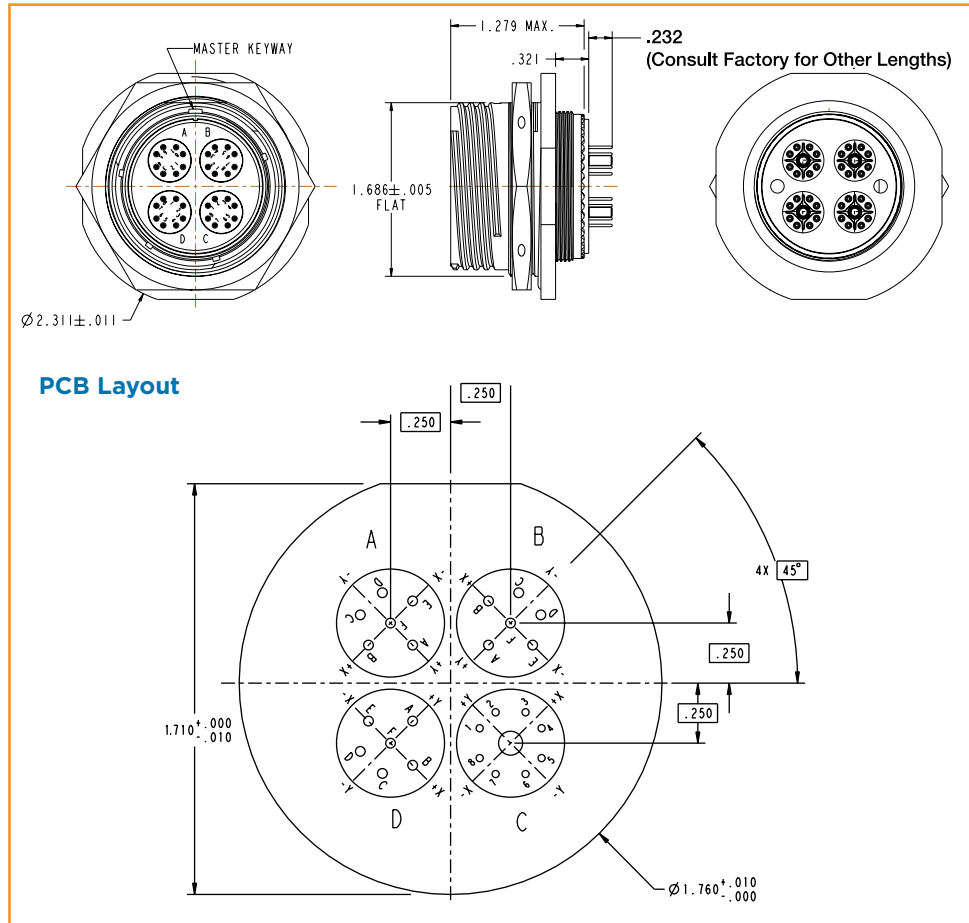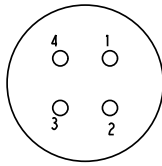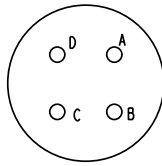
CEELOK FAS-X CONNECTOR MODULES

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 25 shell. Such capabilities allow convenient mixture of signal and power through the connectors.
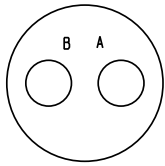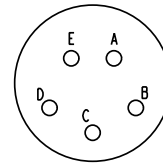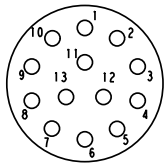
1102
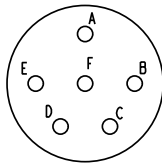2 Size 16 Contacts

11H4
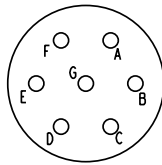4 Size 22 Contacts

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

MFX   1105   P   Z

Termination Type
Z = Crimp Contacts
A – Y = Extended PCB Tail Contacts (Consult Factory)

Contact Plating
P = Pin, Localized Gold Finish
S = Socket, Localized Gold Finish
F = Pin, Full Gold Finish
G = Socket, Full Gold Finish
H = Pin, High-Reliability Finish
J = Socket, High-Reliability Finish
A = Less Pin
B = Less Socket

Shell Size (11)/Contact Arrangement
1102 = 2 Size 16 Contacts
11H4 = 4 Size 22 Contacts (High-Speed Insert Optimized
           for 150-Ohm Quad Cable)
1104 = 4 Size 20 Contacts
1105 = 5 Size 20 Contacts
11H8 = 8 Size 22 Contacts (High-Speed Insert Optimized
           for 4-Pair 100-Ohm Differential Cables)
1135 = 13 Size 22 Contacts
1198 = 6 Size 20 Contacts
1199 = 7 Size 20 Contacts

Product Line
MFX = CeeLok FAS-X Connector Modules
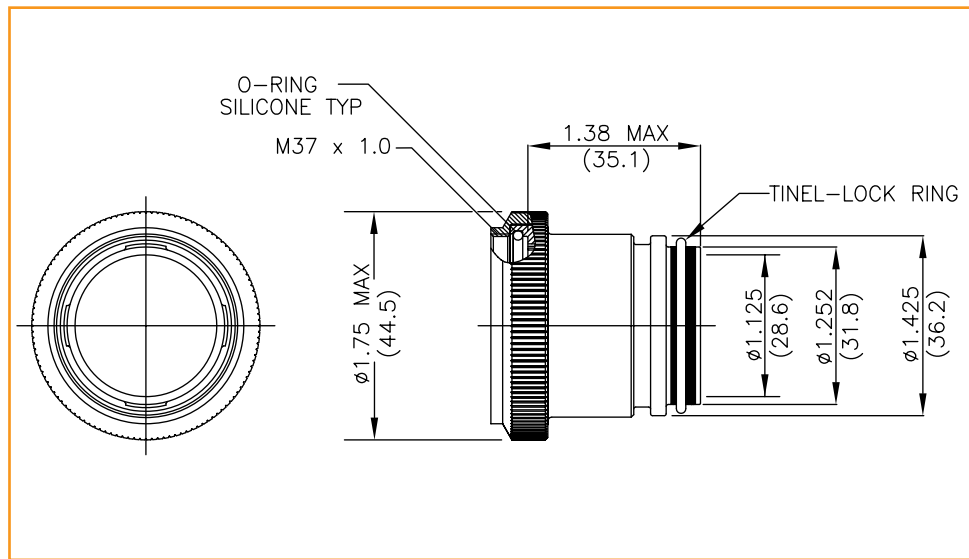
Adapters

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

Part No.

TXS201 A X 00-24 BI

TXS201 A X 00-24 AI
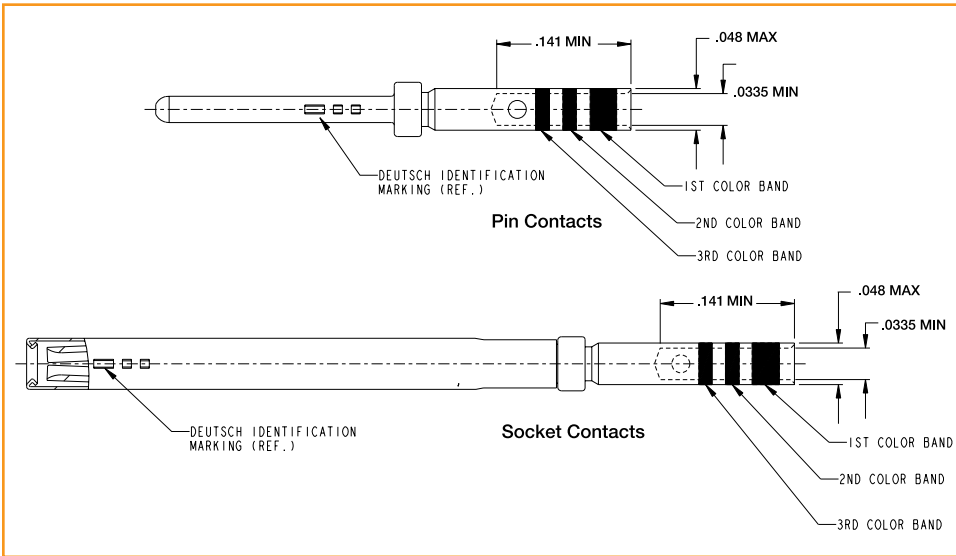
Aluminum alloy body with nickel PTFE plating

BI = Tinel-Lock Ring for dual-layer 36 AWG or single layer 30 AWG braid shields

AI = Tinel-Lock ring for single layer 26 AWG braid shields

Consult your TE representative for other plating and shield termination options

DEUTSCH IDENTIFICATION MARKING (REF.)
.141 MIN
.048 MAX
.0335 MIN
1ST COLOR BAND
2ND COLOR BAND
3RD COLOR BAND
Pin Contacts
Socket Contacts

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 M22520/7-01	M22520/2-09 M22520/7-07
	AS39029/58-360	38941-22, 38941-22L	Blue	Brown	Yellow		
Socket	AS39029/106-614	12333-22	Orange	Blue	Black	M22520/2-01 M22520/7-01	M22520/2-07 M22520/7-05
	AS39029/56-348	38943-22, 38943-22L	Orange	Yellow	Gray		

*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.

For More Information

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Germany	+49 6251 133 1999
Hungary	+36 809 874 04
Italy	+39 011 401 2632
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