

D38999 – TV-CTV

MIL-DTL-38999 Series III



TV MIL-DTL-38999 Series III connectors offer high density contact arrangements in a miniature circular shell. Originally designed for the especially demanding requirements of today's high performance military and commercial aircraft, these connectors are finding their way into applications needing extremely reliable interconnections. TV's features include, total environmental sealing, wide operating temperature range (-65°C up to 200°C), quick-mating, triple lead threaded, self-locking coupling, 100% scoop proof shell design, EMI - RFI shielding, and are available in a ruggedized 500 hour salt spray plating or 1000 hour salt spray material.

Applications

- High Performance Military Aircraft
- Commercial Airlines
- Communications Equipment
- Armored Personnel Carriers & Tanks
- Missiles
- Shipboard

Features

High Reliability

D38999 - TV style connectors are used in performance aircraft that demand reliable connections in some of the most rigorous environments. The connectors must perform flawlessly under wide temperature ranges, high vibrations and be resistant to a vast array of contaminants. Visual confirmation of complete mating is accomplished by the plug coupling nut covering over a red band on the mating shell.

Outstanding EMI Shielding Protection

These connectors provide excellent signal integrity due to the shielded mating system that utilizes 360 degree shell grounding fingers providing protection of up to 65 dB at 10 GHz.

Operates at Extreme Temperatures

These connectors will operate in temperatures from -65°C up to 200°C (-85°F up to 392°F).

High Density Connectors

If space and weight are at a premium, TV connectors offer up to 128 contacts per connector. Ideally suited for the demands of today's digital electronics used on fly-by wire aircraft, advanced robotics, and critical industrial equipment.

Self-Locking Connector Systems

Self-locking coupling nuts and self-locking endbell accessory hardware provide the best performance for threaded connectors in high vibration applications.

Broad Range of Military and Commercial Accessories

Many military standard endbells to M85049 specifications and a wide array of cable termination style are available. Straight, 45 and 90 degree endbells come in many styles from low cost standard clamp to shielded environmentally sealed and everything in between.

Contacts Protection

TV connectors are designed to be scoop proof. Pin contacts are recessed to prevent contact damage and contact shorting from happening when connector halves are put together while mating.

MIL-DTL-38999 approved

TV's are fully intermatable and intermountable with all other manufacturer's MIL-DTL-38999 Series III connectors.

Technical Specifications

MATERIALS AND FINISHES

Shell & Plating

| Aluminum Alloy | Composite | Stainless Steel | Marine Material |
|---|--|---|------------------------------------|
| W - Olive drab Chromate over Cadmium over Electroless Nickel per QQ-P-416 W52 - Olive drab Zinc cobalt F - Electroless Nickel per QQ-N-290 | J - Olive drab Cadmium Plate per QQ-P-416 M - Conductive Electroless Nickel Plating | K - Conductive, Corrosion Resistant Steel, Passivated S - Electrodeposited Nickel per QQ-N-290 | RB - Nickel Aluminum Bronze |

Contacts

Copper alloy

Plating

Gold plated, 50 microinches per MIL-G-45204 type II, grade C, class I

Insulator

Hard dielectric wafer which contains tines for high reliability retention of crimp contacts

Grommet & Seals

Silicone based elastomer

Grounding Springs

Beryllium copper (Grounded Plug Only)

ELECTRICAL DATA

Contact Sizes 22D, 20, 16 and 12

Operating Voltage & Test Voltage (Unmated Condition)

| Test Voltages | Service Rating | | | |
|---------------|----------------|------|------|------|
| | N | M | I | II |
| Sea Level | 1000 | 1300 | 1800 | 2300 |
| 100,000 feet | 200 | 200 | 200 | 200 |

Current Rating by contact size and wire accommodation (Test Amps)

| Wire Size | 22D | 20 | 16 | 12 |
|-----------|-----|-----|------|------|
| 28 | 1.5 | - | - | - |
| 26 | 2.0 | - | - | - |
| 24 | 3.0 | 3.0 | - | - |
| 22 | 5.0 | 5.0 | - | - |
| 20 | - | 7.5 | 7.5 | - |
| 18 | - | - | 10.0 | - |
| 16 | - | - | 13.0 | - |
| 14 | - | - | - | 17.0 |
| 12 | - | - | - | 23.0 |

Contact Resistance of mated contacts end to end

| Contact Size | Maximum Millivolt Drop |
|--------------|------------------------|
| 22D | 40 |
| 20 | 35 |
| 16 | 25 |
| 12 | 25 |

Insulation Resistance

5,000 megohms minimum

MECHANICAL

Operating Temperature

W, W52, RB & J plating -65°C to 175°C (-85°F to 347°F)
F, M, K & S plating -65°C to 200°C (-85°F to 392°F)

Sealing

Against sand, dust per MIL-STD-202 & ice resistance

Wire Sealing Range

| Contact Size | Minimum inches | Maximum inches | Minimum mm | Maximum mm |
|--------------|----------------|----------------|------------|------------|
| 22D | 0.030 | 0.054 | 0.76 | 1.37 |
| 20 | 0.040 | 0.083 | 1.02 | 2.11 |
| 16 | 0.065 | 0.109 | 1.65 | 2.77 |
| 12 | 0.097 | 0.142 | 2.46 | 3.61 |
| 10 | 0.135 | 0.162 | 3.42 | 4.12 |
| 8 (coax) | 0.135 | 0.155 | 3.43 | 3.94 |
| 8 (twinax) | 0.124 | 0.134 | 3.15 | 3.40 |

Technical Specifications

Insulation Strip Length

| Contact Size | Strip Length |
|--------------|--------------|
| 22D | .125 (3.18) |
| 20 | .188 (4.77) |
| 16 | .188 (4.77) |
| 12 | .188 (4.77) |

Mating Life 500 cycles minimum

Salt Spray Finish W & W52: 500 hour per MIL-STD-1344A method 1001 condition C
Finish F: 48 hour per MIL-STD-1344A method 1001 condition B
Finish J & M: 2000 hour per MIL-STD-1344A method 1001 condition C
Finish S & K: 2000 hour per MIL-STD-1344A method 1001 condition C
Finish RB: 500 hour per BS CECC 75201-002

Temp. Durability Finish W 175°C (347°F), Finish F 200°C (392°F), mated, wired test period 1000 hours to MIL-STD-1344 Method 1005
Finish M, K & S: 200°C (392°F)
Finish J, RB & W52: 175°C (347°F)

Chemical Resistance Lubricating oils, hydraulic fluids, coolants, deicing fluids per MIL-STD-1344A Method 1016 condition a-1

Sine Vibration 60g at -55°C per MIL-DTL-38999K 4.5.22.2.1

Random Vibration 49.5 grms at ambient temperatures

Shock 300 grms

EMI Shielding Effectiveness 100 MHz to 10 GHz - minimum attenuation of 50dB

Contact Type Crimp, fiber optic, coax, twinax, or printed circuit

Number of Circuits 2 to 128

Contact Insertion Rear Insertion/Rear Extraction with simple plastic or high quality metal hand tools.

Contact Retention Per MIL-DTL-38999K tested to MIL-STD-1344A method 2007

| Contact | Axial load Newtons $\pm 10\%$ | Axial load Pounds $\pm 10\%$ |
|---------|-------------------------------|------------------------------|
| 22D | 44 | 10 |
| 20 | 67 | 15 |
| 16 | 111 | 25 |
| 12 | 111 | 25 |

Polarization Five keyways with optional master keyway rotations
(Note insert and main keyways remain fixed)

Approvals MIL-DTL-38999

All dimensions in inches (millimeters in parenthesis)

Cross Section

