Amphenol TV-CTV Tri-Start MIL-DTL-38999 Series III

COMBINES HIGH COUPLING DURABILITY WITH EMI-SHIELDING AND MOISTURE & CORROSION RESISTANCE

TV-CTV Tri-Start MIL-DTL-38999 Series III connectors have high-density contact arrangements in a miniature circular shell. Originally designed for the high-performance requirements of military and commercial aircraft, these circular connectors are perfect for applications requiring extremely reliable interconnections. TV's are quick-mating and environmentally-sealed.

- Space-rated Class G outgassing available in 48 hours
- Intermateable with Deutsch, ITT Cannon, Souriau and all MIL-DTL-38999 series III connectors
- Formerly MIL-C-38999

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 some of the most rigorous environments and must perform flawlessly under wide temperature ranges, high vibrations and be resistant to a vast array of contaminants. Visual confirmation of mating is provided by the plug coupling nut covering 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 operate in temperatures from -85°F to +392°F (-65°C to +200°C).

HIGH-DENSITY CONNECTORS

If space is at a premium, TV connectors offer up to 128 contacts per connector. Ideally suited for the demands of digital electronics 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 styles are available. Straight, 45 and 90-degree endbells come in many styles from cost-effective standard clamp to shielded, environmentally-sealed and everything in between.

CONTACT PROTECTION

TV connectors are designed to be scoop-proof. Pin contacts are recessed to prevent contact damage and contact shorting when connector halves are mated.

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	J - Olive drab cadmium plate per QQ-P-416	K - Conductive, corrosion-resistant steel passivated	RB - Nickel aluminum bronze
DT - Durmalon™	M - Conductive electroless nickel plating	S - Electrodeposited nickel per QQ-N-290	
W52 - Olive drab zinc cobalt			
F - Electroless nickel QQ-N-290			
ZN - Zinc nickel			

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)

	SERVICE RATING			
TEST VOLTAGES	N	M	I	II
Sea Level	1000	1300	1800	2300
100,000 Feet	200	200	200	200

Current Rating by Contact Size & Wire Accommodation (Test Amps)

WIRE SIZE	22D	20	16	12	10	8
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	-	-
10 (power)	-	-	-	-	33.0	-
8 (power)	-	-	-	-	-	46.0

Contact Resistance of Mated Contacts End to-End

CONTACT SIZE	MAXIMUM MILLIVOLT DROP
22D	73
20	55
16	49
12	42
10 (power)	33
8 (power)	26

Insulation Resistance: 5,000 megohms minimum

MECHANICAL

Operating Temperature: W, W52, RB, J & ZN plating -65°C to 175°C (-85°F to 347°F)
DT, 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
10 (power)	0.135	0.162	3.42	4.12
8 (power)	0.135	0.155	3.43	3.94
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)
10 (power)	.335 (8.51)
8 (power)	.470 (11.94)

Mating Life
500 cycles minimum

Salt Spray
Finish W: 500-hour per MIL-STD-1344A method 1001 condition C
Finish W52: 48-hour
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
Finish DT & ZN: 500-hour

Tempature 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 DT, M, K & S: 200°C (392°F)
Finish J, RB, W52 & ZN: 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, fibre 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 ±10%	AXIAL LOAD POUNDS ±10%
22D	44	10
20	67	15
16	111	25
12	111	25
10	111	25
8	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