

Amphenol®

POWER 38999

High Power Platforms



High Power 38999 Planforms

Amphenol is the world leader in the design, manufacture and supply of high-performance interconnect systems for military, commercial and industrial applications. Amphenol offers a complete portfolio of power solutions for demanding and harsh environments.

Amphenol has extended its series of 38999 circular connectors to include a new range of power inserts to respond to market demands for increased power in a proven high reliability 38999 circular connector format. The demand for more power is consistent across all of Amphenol's core markets – military, commercial air and industrial – and typical applications are intelligent power distribution units, power conversion and transformers, slip rings, turret systems, motors, integrated starter generators, actuation systems and hybrid vehicles.

Amphenol's extended series of 38999 Power inserts offers customers a range of contact sizes from size #20 (7.5A) to size #4 (100A). Terminations are available to suit different applications such as busbar, tapped hole, crimp, solder bucket and pintails. Inserts are available in standard connector styles such as; jam-nut, box mount, plug, and bulkhead feed-through.

Shells can be manufactured in Aluminium, Aluminium-Bronze, Stainless Steel, Composite and Titanium. Additionally hermetic sealing is available if customers require a glass-metal seal. Amphenol can incorporate EMI and EMP filters to protect against EMI interference and transient energy surges, such as lightning strike.

The 38999 Power inserts are available in either proprietary or QPL qualified plating finishes including Cadmium, Nickel, Zinc Cobalt and the latest qualified QPL Black Zinc Nickel RoHS compliant plating.

Amphenol's new range of 38999 Power inserts coupled with its new High Power Single Pole 38999 Rhino connector, which carries up to 1000A, means Amphenol can offer a complete solution for all customers' power challenges.

Key Features

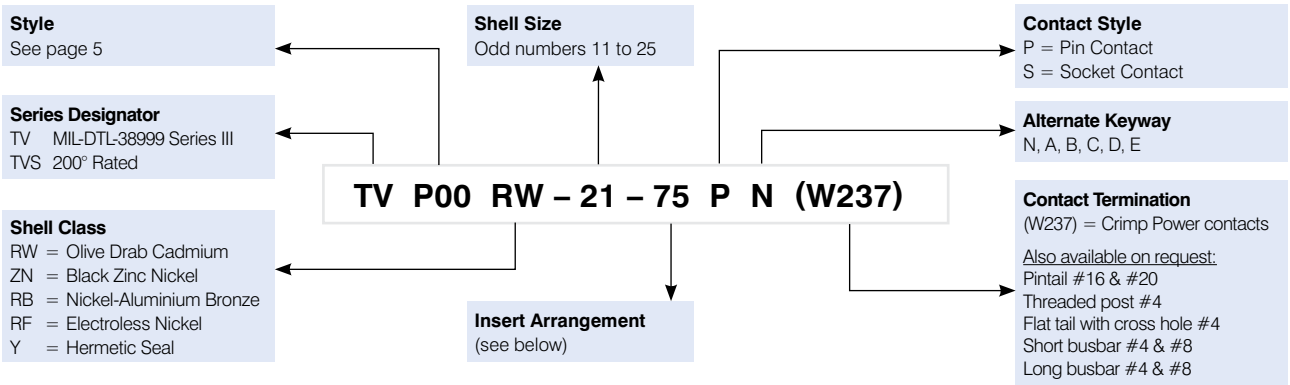
- **Electrical Performance** – 7.5A to 100A, operating voltage up to 600v
- **Range** – single and multi-pole mixed insert arrangements
- **Termination** – busbar, tapped hole, crimp, pintail and solder bucket
- **Shell Materials** – Aluminium, Aluminium-Bronze, Stainless Steel, Titanium and Composite
- **Rugged** – 38999 qualified performance
- **RoHS** – Black Zinc Nickel Plating
- **Added-value services** – harness and cable assembly capability

Typical Power Applications

- Intelligent power distribution units
- Power conversion and transformers
- Slip rings
- Turret systems
- Motors
- Engine marriage panels
- Bulkhead feedthroughs
- Integrated starter generators
- Actuation systems
- Hybrid vehicles



High Power 38999 Part Numbering



For mixed planform contact termination consult factory.

Insert Arrangements

Front face of pin inserts illustrated

	11-01	17-52	21-75	21-42
Service rating	M	M	I	I
No. of contacts	1	2	4	2
Contact size	8	8	8	4

	21-72	21-48	23-06
Service rating	I	M	M
No. of contacts	2 6	4	6
Contact size	4 16	8	8

	25-08	25-11	25-1A
Service rating	M	N	M
No. of contacts	8	9 2	4 4
Contact size	8	10 20	4 16

Contact legend

4 8 10 16 20

High Power 38999 Performance Information

Test/parameter	Description		
Electrical			
Current Rating	size #20 contacts: 7.5A d.c.		
	size #16 contacts: 13A d.c.		
	size #10 contacts: 33A d.c.		
	size # 8 contacts: 60A d.c.		
	size # 4 contacts: 100A d.c.		
Shell to Shell Continuity	10mΩ maximum for finishes ZN, RW, RF, SS & RB		
Contact Resistance	size #20 contacts: 4.70mΩ		
	size #16 contacts: 2.00mΩ		
	size #10 contacts: 0.85mΩ		
	size # 8 contacts: 0.60mΩ		
	size # 4 contacts: 0.26mΩ		
Insulation Resistance	5000MΩ at ambient, 1000MΩ at max temp.		
Working Voltage	M: 400V Service AC (RMS)		
	N: 300V Service AC (RMS)		
	I: 600V Service AC (RMS)		
Dielectric Withstanding Voltage	M: 1300 VRS Test Voltage (sea level)		
	N: 1000 VRS Test Voltage (sea level)		
	I: 1800 VRS Test Voltage (sea level)		
Technical			
Mating Durabiity	500 cycles		
Torque Settings (lb.f.in.)	Shell Size	Backshell	Panel Nut
	#11	71/81	40/46
	#17	111/121	80/85
	#21	131/141	100/110
	#23	131/141	110/120
	#25	131/141	120/130
Environmental			
Operating Temperature Range	-65°C to +175°C for finishes ZN, RW, RB		
	-65°C to +200°C for finishes RF, SS		
Sealing	As per Mil-DTL-38999		
Salt Spray	Up to 500hrs dependant on plating finish		
RoHS Compliant	Yes, dependant on plating finish		

Styles

TV06 (D38999/26) – Straight Plug

Technical drawing of the TV06 Straight Plug. The front view shows a circular shell with a diameter dimension 'Q'. The side view shows the plug's profile with dimensions: 1.234 MAX (31.34 MAX), 1.220 MAX (31.00 MAX), .359 MAX (9.12 MAX), .591 +.003 / -.000 (15.01 +.08 / -.00), and VTHREAD.

Shell Size	MS Shell Size Code	Q Max.	V Thread Metric
11	B	25.0	M15X1-6g
17	E	35.7	M25X1-6g
21	G	41.7	M31X1-6g
23	H	44.9	M34X1-6g
25	J	48.0	M37X1-6g

All dimensions in mm, for reference only.

TV07 (D38999/24) – Jam Nut Receptacle

Technical drawing of the TV07 Jam Nut Receptacle. The front view shows a hexagonal shell with dimensions C, H, and S (2 PLACES). The side view shows the receptacle's profile with dimensions: PANEL THICKNESS .062 MIN .125 MAX (1.57 MIN 3.18 MAX), .378 MAX (9.60 MAX), .091 MAX (2.31 MAX), K REF SHELL SIZES 9/11 .871 22.12, SHELL SIZES 13/25 .878 22.30, and 1.280 MAX (32.51 MAX). VTHREAD is also indicated.

Shell Size	MS Shell Size Code	C Max.	H Hex +.43 - .41	S ±.25	V Thread Metric
11	B	35.20	25.40	31.75	M15X1-6g
17	E	44.73	36.53	41.28	M25X1-6g
21	G	52.65	42.80	49.23	M31X1-6g
23	H	55.85	46.02	52.37	M34X1-6g
25	J	59.00	50.80	55.58	M37X1-6g

Note: Deep reach receptacles are available for panel thicknesses up to .750 max. All dimensions in mm, for reference only.

TVP00 (D38999/20) – Wall Mounting Receptacle

Technical drawing of the TVP00 Wall Mounting Receptacle. The front view shows a rectangular shell with dimensions S (2 PLACES), R1 (2 PLACES), R2 (2 PLACES), and TT (4 PLACES) with a tolerance of .005 (M) / .13 (M). The side view shows the receptacle's profile with dimensions LL, M, L, and VTHREAD. A total length dimension of 1.240 MAX (31.50 MAX) is also shown.

Shell Size	MS Shell Size Code	L Max.	M +.00 - .13	R ¹	R ²	S Max.	T ±.20	V Thread Metric	LL +.15 - .00	TT ±.20
11	B	11.91	20.83	20.62	18.26	26.5	3.25	M15X1-6g	22.99	4.93
17	E	11.91	20.83	26.97	24.61	33.7	3.25	M25X1-6g	22.99	4.93
21	G	12.70	20.07	31.75	29.36	40.1	3.25	M31X1-6g	22.99	4.93
23	H	12.70	20.07	34.93	31.75	43.3	3.91	M34X1-6g	22.99	6.15
25	J	12.70	20.07	38.10	34.93	46.4	3.91	M37X1-6g	22.99	6.15

Designates true position dimensioning

All dimensions in mm, for reference only.

Accessories and Tooling

Backshells



Family code

Connector group (default)

Suitable boot, omit for non:
B1 = Straight boot
B2 = 90° boot

Angle/profile:
S = Straight
A = 90°
B = 45°

Coupling:
S = Self-lock
R = Spin coupling

Shell size
Designator: 10-24

Entry size:
01
02

Material/finish:
ZN = Black Zinc Nickel
N = Electroless Nickel
Z = Black Zinc Cobalt
Y = Olive Drab Zinc Cobalt
W = Cadmium

Contact style:
B = With band for braid fixing
X = Without band

Length:
9 = Standard size

Designator: BK4 X X L 99 99 9 X X-B1

Please consult factory for advice on backshell specification to suit cable requirements.

Cap



Family code

Use for MIL-DTL-38999 Series III TV

Eyelet:
0 = No eyelet, no lanyard
1 = Lanyard + crimp ferrule
2 = Lanyard + large eyelet
3 = Lanyard + small eyelet

Shell size:
Series III (11 to 25)

Style:
P = Plug
R = Receptacle
F = Heavy Duty Plug
G = Heavy Duty Receptacle

Finish
See table below

Lanyard type:
0 = No lanyard
1 = Black terylene cord
2 = Stainless steel chain
3 = Plastic covered wire rope

Lanyard length
See table below

Designator: 418-60 3 1 - 13 R 030 1 - 04

Lanyard length (all +/- 0.25 inches)		Finish	
035	3.5 inches (90mm)	-02	Electroless Nickel plate
040	4 inches (100mm)	-03	Olive Drab Cadmium
050	5 inches (125mm)	-04	Olive Drab Zinc Cobalt
060	6 inches (150mm)	-08	Stainless Steel
090	9 inches (230mm)	-09	Nickel Aluminium Bronze
120	12 inches (300mm)	-10	Black Zinc Nickel

Crimping Tools

Contact Size/Type	Crimping Tool	Turret Die or Positioner
#4 Pin and Socket	809947	809948
#8 Pin and Socket	809872	809873
#10 Pin and Socket	TP-201423	Not applicable
#12 Pin and Socket	M22520/1-01	M22520/1-04
#16 Pin and Socket	M22520/1-01 M22520/7-01	M22520/1-04 M22520/7-04
#20 Pin and Socket	M22520/1-01 M22520/2-01 M22520/7-01	M22520/1-04 M22520/2-10 M22520/7-08

Where 2 or 3 tools are listed for a contact size, only one tool and its die or positioner, adjacent within the table, are required to crimp the contact. The above crimping tools and positioners are available from a QPL approved tool manufacturer.

Standard Contacts

Contact Size	Pin	Socket	Seal Plug
#4	900007	418-3031	N/A
#8	900197	900217	MS27488-8-3
#10	M39029/58-528	M39029/56-527	M85049/81-10
#12	M39029/58-365	M39029/56-353	MS27488-12-2
#16	M39029/58-364	M39029/56-352	MS27488-16-2
#20	M39029/58-363	M39029/56-351	MS27488-20-2

Insertion and Removal Tools

Contact Size	Plastic Tools		Metal Tools	
	Insertion Tool	Removal Tool	Insertion Tool	Removal Tool
#4	N/A	M81969/14-07	N/A	809943
#8	N/A	M81969/14-12	N/A	M81969/8-14
#10	M81969/14-05	M81969/14-05	M81969/8-11	M81969/8-12
#12	M81969/14-04	M81969/14-04	M81969/8-09	M81969/8-10
#16	M81969/14-03	M81969/14-03	M81969/8-07	M81969/8-08
#20	M81969/14-10	M81969/14-10	M81969/8-05	M81969/8-06

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