

## TECHNICAL CHARACTERISTICS GENERAL CHARACTERISTICS

### TV-CTV CONNECTORS (MIL-DTL-38999 SERIES III/EN3645)

- MIL-DTL-38999 series III connectors
- EN3645 connectors
- Dedicated to harsh environment applications
- 9 shell sizes (from 09 to 25)
- Thread coupling
- 100% scoop-proof
- More than 80 contact arrangements
- Intermountable with MIL-DTL-38999 series I



### AMPHENOL ADDED VALUE

Amphenol goes further the European and American standards by offering an extended range with:

- Inserts compatible with quadax
- Grounded connectors with conductive insert for specific use
- Receptacles with reinforced sealing
- Hermetic version in Y & N classes
- High density inserts (with size 23 contacts)
- Filtered versions using tubular or planar technology

### MAIN FEATURES

#### SHELL MATERIAL AND PLATING:

- Aluminium Standard material
- Composite Lightweight solution up to 70%weight saving  
Corrosion resistant up to 2000H of salt spray exposure
- Stainless steel Firewall capability
- Marine bronze High corrosion resistance  
Robustness for marine applications

#### PLATING:

- Olive drab cadmium
- Nickel
- Passivation
- Black zinc nickel

### CONTACTS

- Standard contacts plated with a minimum of 1.27µm gold
- Size 00, 4, 8, 10, 12, 16, 20, 22D, 23
- Signal, power, twinax, coax, quadax and optical termini

**Contact protection:** interfacial seal ensures sealing around each contact and prevents electrolytic erosion



### OTHERS

#### Quick coupling

- Mate and self-lock in a 360° turn of the coupling nut
- Anti-decoupling device for high vibration performance

#### EMI/RFI protection:

- Shell to shell bottoming
- Grounding fingers on the plug shell

### APPLICATIONS

#### Military and aeronautic applications:

battlefield, ground vehicles, aircrafts, communication systems...

#### Advanced industrial applications:

high vibration requirements, high density

# TECHNICAL CHARACTERISTICS

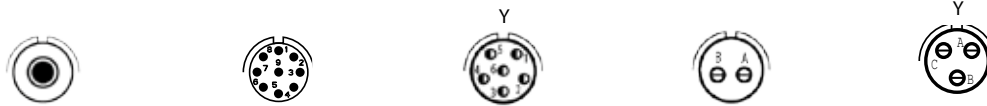
# INSERT ARRANGEMENTS

Contact Size	23 <small>(high density)</small>	22D	20	16	12	8	4
Caption							
Available:							
Coax	-	-	-	✓	✓	✓	-
Differential Twinax	-	-	-	-	-	✓	-
Quadax	-	-	-	-	-	✓	-
Power contacts	-	-	-	✓	✓	✓	✓
Grounded cavity	-	-	-	✓	✓	✓	-

Front face of male insert. (Only the major keyway is illustrated)

- 1 MIL-DTL-38999 Series III / EN3645 insert arrangement reference
- 2 TV-CTV insert arrangement
- 3 Service class
- 4 Number of contacts
- 5 Contact sizes

09



1	- / 09G01		A 35 / 09N35		A 98 / 09N98
2	09-05	09-09	09-35	09-94	09-98
3	N/A		M	M	I
4	1	9	6	2	3
5	8 Twinax°	23	22D	20	20

11



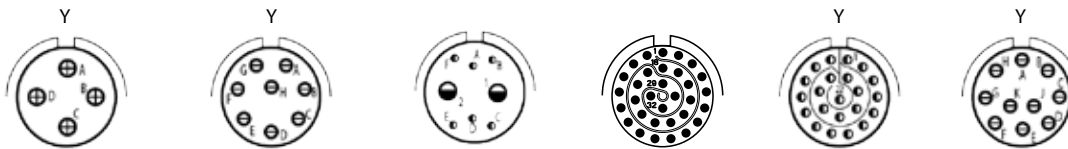
1	- / 11N01	B 2 / 11N02	- / 11N04	B 5 / 11N05	- / 11N12
2	11-01	11-02	11-04	11-05	11-12
3		I	I	I	II
4	1	2	4	5	1
5	8 Twinax°	16	20	20	12

11



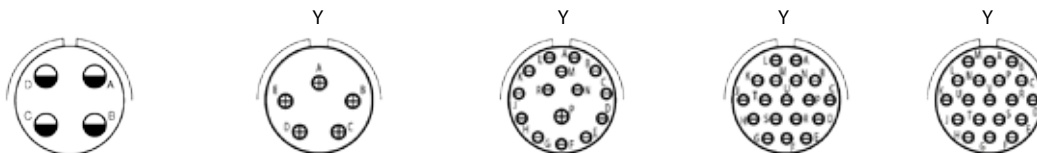
1		B 35 / 11N35	B 98 / 11N98	B99 / 11N99
2	11-19	11-35	11-98	11-99
3		M	I	I
4	19	13	6	7
5	23	22D	20	20

13



1	C 4 / 13N04	C 8 / 13N08	- / 13N26	C 35 / 13N35	C 98 / 13N98
2	13-04	13-08	13-26	13-32	13-98
3	I	I	M	M	I
4	4	8	6	2	32
5	16	20	22D	12	23
					22D
					20

15



1		D 05 / 15N05	D 15 / 15N15	D 18 / 15N18	D 19 / 15N19
2	15-04	15-05	15-15	15-18	15-19
3	I	M	I	I	I
4	4	5	14	1	18
5	12	16	20	16	20
					20

## TECHNICAL CHARACTERISTICS

Contact Size	23 <small>(high density)</small>	22D	20	16	12	8	4
Caption	●	◐	◑	⊕	◑	●	○
Available:							
Coax	-	-	-	-	✓	✓	-
Differential Twinax	-	-	-	-	-	✓	-
Quadrax	-	-	-	-	-	✓	-
Power contacts	-	-	-	✓	✓	✓	✓
Grounded cavity	-	-	-	✓	✓	✓	-

## INSERT ARRANGEMENTS

Front face of male insert. (Only the major keyway is illustrated)

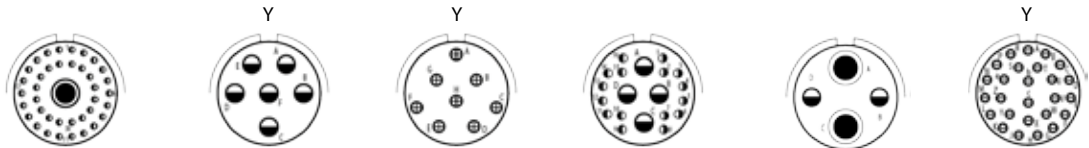
- 1 MIL-DTL-38999 Series III / EN3645 insert arrangement reference
- 2 TV-CTV insert arrangement
- 3 Service class
- 4 Number of contacts
- 5 Contact sizes

15



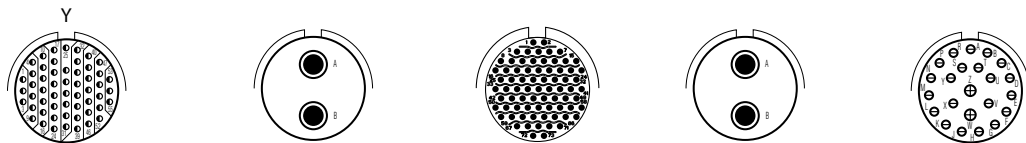
1			D 35 / 15N35		D 97 / 15N97	
2	15-25**		15-35		15-55	
3	M		M		I	
4	22	3	37		8	4
5	22D	16	22D		20	16

17



1	E 2 / 17N02		E 6 / 17N06		E 8 / 17N08		- / 17N20		- / 17N22		E 26 / 17N26	
2	17-02		17-06		17-08		17-20**		17-22		17-26	
3	M		I		II		M		M		I	
4	38	1	6	8	16	4	2	2	8 Twinax <sup>c</sup>		26	
5	22D	8 Twinax <sup>c</sup>	12	16	22D	12	12 Coax	8 Twinax <sup>c</sup>		20	16	

17



1	E 35 / 17N35						- / 17N75		E 99 / 17N99	
2	17-35		17-52		17-73		17-75		17-99	
3	M						M		I	
4	55		2	73	23	2	21	2	20	16
5	22D		8 Quadrax (meets 17-82 Boeing spec)			8 Twinax <sup>c</sup>				

19



1	F 11 / 19N11		- / 19N17				F 18					
2	19-11		19-17				19-18		19-28		19-30	
3	II		M				M		I		I	
4	11	10	1	4	2	14	4	26	2	29	1	
5	16	22D	20	16	8 Twinax <sup>c</sup>	22D	8 Twinax <sup>c</sup>	20	16	20	16	

19



1	- / 19N31		F 32 / 19N32			F 35 / 19N35			
2	19-31		19-32			19-35		19-88	
3	M		I			M		I	
4	2	1	12	32	66	88			
5	8 Coax	12	22D	20	22D	23			

# TECHNICAL CHARACTERISTICS

# INSERT ARRANGEMENTS

Contact Size	23 <small>(high density)</small>	22D	20	16	12	8	4
Caption							
Available:							
Coax	-	-	-	✓	✓	✓	-
Differential Twinax	-	-	-	-	-	✓	-
Quadax	-	-	-	-	-	✓	-
Power contacts	-	-	-	✓	✓	✓	✓
Grounded cavity	-	-	-	✓	✓	✓	-

Front face of male insert. (Only the major keyway is illustrated)

- 1 MIL-DTL-38999 Series III / EN3645 insert arrangement reference
- 2 TV-CTV insert arrangement
- 3 Service class
- 4 Number of contacts
- 5 Contact sizes

21

1	G 11 / 21N11	G 16 / 21N16	- / 21N20	G 35 / 21N35	G 39 / 21N39
2	21-11	21-16	21-AJ	21-35	21-39
3	I	II	M	M	I
4	11	16	18	79	37 2
5	12	16	20	22D	20 16

21

1	G 41 / 21N41	21-48	G 75 / 21N75	21-121
2	21-41	21-48	21-75	21-121
3	I	M	M	
4	41	4	4	121
5	20	8 power	8 coax or 8 twinax*°	23

Quadax not available

23

1	- / 23N06	23-14	H 21 / 23N21	H 35 / 23N35
2	23-06	23-14	23-21	23-35
3	M	I	II	M
4	6	14	21	100
5	8 twinax*°	12	16	22D

23

1	H 53 / 23N53	- / 23N54	H 55 / 23N55	23-151
2	23-53	23-54	23-55	23-151
3	I	M	I	
4	53	40	55	151
5	20	22D	20	23

## TECHNICAL CHARACTERISTICS

Contact Size	23 <small>(high density)</small>	22D	20	16	12	8	4
Caption	●	◐	⊖	⊕	◑	●	○
Available:							
Coax	-	-	-	✓	✓	✓	-
Differential Twinax	-	-	-	-	-	✓	-
Quadrax	-	-	-	-	-	✓	-
Power contacts	-	-	-	✓	✓	✓	✓
Grounded cavity	-	-	-	✓	✓	✓	-

## INSERT ARRANGEMENTS

Front face of male insert. (Only the major keyway is illustrated)

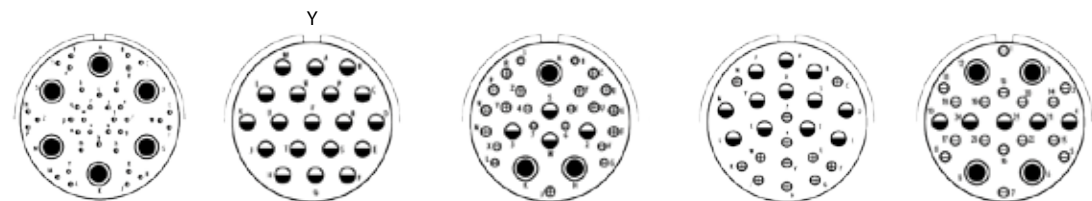
- 1 MIL-DTL-38999 Series III / EN3645 insert arrangement reference
- 2 TV-CTV insert arrangement
- 3 Service class
- 4 Number of contacts
- 5 Contact sizes

25



1	J 4 / 25N04		J 7 / 25N07		J 8 / 25N08		J 11 / 25N11		25-1A	
2	25-04		25-07		25-08		25-11		25-1A	
3	I		M		M		N		I	
4	48	8	97	2	8	2	9	4	4	
5	20	16	22D	8 Twinax°	8 twinax <sup>4</sup>	20	10 power	16	4 power	

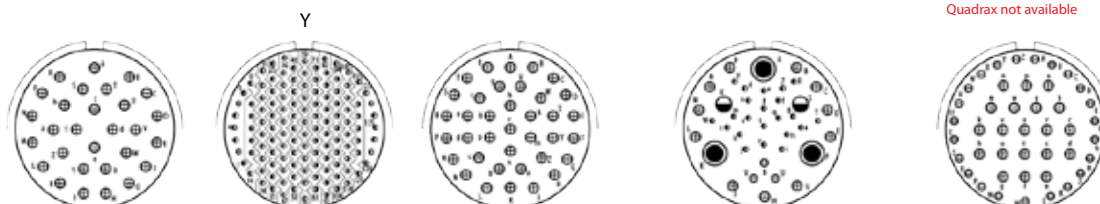
25



1	- / 25L17		J 19 / 25N19		J 20 / 25N20		J 24 / 25N24		- / 25N26			
2	25-17		25-19		25-20		25-24		25-26			
3	M		I		N		I		I			
4	36	6	19	10	13	3	4	12	12	16	5	4
5	22D	8 twinax°	12	20	16	8 twinax°	12 coax	16	12	20	12	8 coax

Quadrax not available

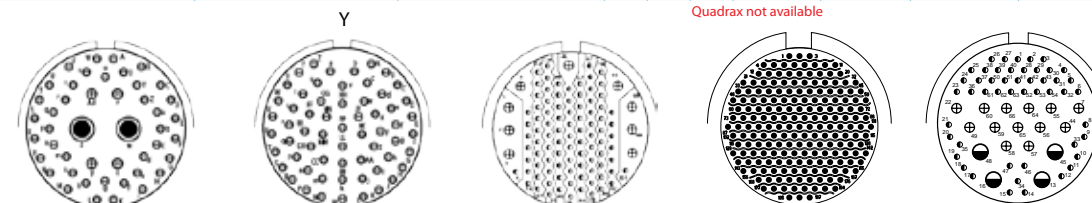
25



1	J 29 / 25N29		J 35 / 25N35		J 37 / 25N37		25-41		J 43 / 25N43	
2	25-29		25-35		25-37		25-41		25-43	
3	I		M		I		I		I	
4	29	128	37	22	3	11	2	3	23	20
5	16	22D	16	22D	20	16	12 coax	8 twinax°	20	16

Quadrax not available

25



1	J 46 / 25N46		J 61 / 25N61		25-92**		25-187		25-F4	
2	25-46		25-61		25-92**		25-187		25-F4	
3	I		I		M		I		Size 22D=M, Balance =I	
4	40	4	2	61	92	9	187	49	13	4
5	20	16	8 coax	20	22D	16	23	22D	16	12

\* Military P/N delivered with 8 twinax and proprietary P/N delivered with size 8 coaxial contacts for RG 180 and RG 195 wire.

\*\* Not available in composite version.

Y Available in hermetic version.

○ Delivered with twinax contacts for simple braid cable (M17/1760002, AECMA Pr EN 3375 - 003, Raychem 10612, EPD44690, EPD44691).

Δ Delivered with twinax contacts for double braid cable (PAN 6421, AECMA Pr EN 3375 - 004, Raychem 10613, EPD44692, EPD44693).

# TECHNICAL CHARACTERISTICS INSERT ARRANGEMENTS

Arrangements	Service Class	Total number of contacts	Number and size of contacts										Grounded insert availability**		Quadrax available			
			23	22D	20	16	12	12 coax	10 power	8 power	8 coax	8 triax or twinax	4 power	P		S		
			09-05*	N/A	1												1	
09-09		9	9															
09-35	M	6		6														
09-94	M	2			2													
09-98	I	3			3													
11-01		1											1					X
11-02	I	2				2										X	X	
11-04	I	4			4													
11-05	I	5			5													
11-12	II	1						1										
11-19		19	19															
11-35	M	13		13														
11-98	I	6			6													
11-99	I	7			7													
13-04	I	4				4										X		
13-08	I	8			8													
13-26	M	8		6				2										
13-32		32	32															
13-35	M	22		22														
13-98	I	10			10													
15-04	I	4						4										
15-05	II	5				5										X		
15-15	I	15			14	1												
15-18	I	18			18													
15-19	I	19			19													
15-25	M	25		22		3												
15-35	M	37		37														
15-55		55	55															
15-97	I	12			8	4												
17-02	M	39		38								1						X
17-06	I	6						6								X		
17-08	II	8				8										X	X	
17-20	M	20		16				4										
17-22		4							2				2			X	X	X
17-26	I	26			26													
17-35	M	55		55														
17-52	I	2														X	X	X
17-73		73	73															
17-75	M	2										2						X
17-99	I	23			21	2												
19-11	II	11				11										X	X	
19-17	M	17		10	1	4							2					X
19-18	M	18		14									4					X
19-28	I	28			26	2												
19-30	I	30			29	1												
19-31	M	15		12				1				2						X
19-32	I	32			32													
19-35	M	66		66														
19-88		88	88															
21-11	I	11						11										
21-16	II	16				16										X		
21-AJ	M	20			18								2					X
21-35	M	79		79														
21-39	I	39			37	2												
21-41	I	41			41													
21-48		4								4								
21-75°	M	4									4	or 4				X	X	X
21-121		121	121															

Legend: \* High-Density arrangements  
 \* Only grounded insert version available  
 \*\* Grounded version (metallic insert for use with coaxial, twinax or quadrax contacts, for receptacle only).  
 ° 21-75 delivered with TWINAX contacts when ordered under the Mil P/N  
 For CTV: 15-25& 17-20 arrangements not available

# TECHNICAL CHARACTERISTICS INSERT ARRANGEMENTS

Arrangements	Service Class	Total number of contacts	Number and size of contacts											Grounded insert availability**		Quadrax available		
			23	22D	20	16	12	12 coax	10 power	8 power	8 coax	8 triax or twinax	4 power	P	S			
			23-06	M	6												6	
23-14	I	14						14										
23-21	II	21					21									X	X	
23-35	M	100		100														
23-53	I	53			53													
23-54	M	53		40		9	4											
23-55	I	55			55													
23-151		151	151															
25-04	I	56			48	8												
25-07	M	99		97									2					X
25-08	M	8											8		X	X		X
25-11	N	11			2				9									
25-1A		8				4								4				
25-17	M	42		36									6					X
25-19	I	19						19							X			
25-20	N	30			10	13		4*					3					X
25-24	I	24				12	12											
25-26	I	25			16		5					4						
25-29	I	29				29									X			
25-35	M	128		128														
25-37	I	37					37											
25-41	I	41		22	3	11		2*					3					
25-43	I	43			23	20												
25-46	I	46			40	4						2						X
25-61	I	61			61													
25-92	M	101		92		9												
25-187		187	187															
25-F4	M	66		49		13	4											

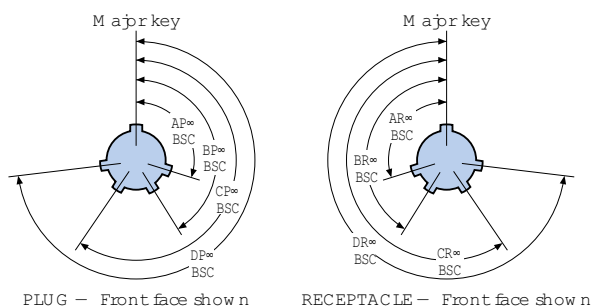
**High-Density arrangements**

Legend: \*\* Grounded version (metallic insert for use with coaxial, twinax or quadrax contacts, for receptacle only).

## TECHNICAL CHARACTERISTICS CODING - POLARIZATION

To avoid cross-plugging problems in applications requiring the use of more than one MIL-DTL-38999 III connector of the same size, alternate key-rotations are available as indicated in the accompanying chart. As shown in the diagram below, the secondary keys rotate clockwise from the major one.

In the reference system, the polarization is shown by the letters N, A, B, C, D or E.



Shell size	Coding identification letter	AR° or AP° BSC	BR° or BP° BSC	CR° or CP° BSC	DR° or DP° BSC
9	N	105	140	215	265
	A	102	132	248	320
	B	80	118	230	312
	C	35	140	205	275
	D	64	155	234	304
11 and 13	E	91	131	197	240
	N	95	141	208	236
	A	113	156	182	292
	B	90	145	195	252
	C	53	156	220	255
15	D	119	146	176	298
	E	51	141	184	242
	N	80	142	196	293
	A	135	170	200	310
	B	49	169	200	244
17 and 19	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
	N	80	142	196	293
	A	135	170	200	310
21 and 23	B	49	169	200	244
	C	66	140	200	257
	D	62	145	180	280
	E	79	153	197	272
	25				

HOW TO ORDER

STANDARD VERSIONS

AMPHENOL DESIGNATION

Series	TV	P00	R	Q	W	17-75	P	A	-	-
<b>TV:</b> Metallic shell										
<b>CTV:</b> Composite shell										
<b>Shell type</b>										
<b>P00:</b> Square flange receptacle: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)										
<b>PS00:</b> Square flange receptacle: 200°C *** (nickel, s.steel, bronze)										
<b>07:</b> Jam nut receptacle: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)										
<b>S07:</b> Jam nut receptacle: 200°C *** (nickel, s.steel, bronze)										
<b>06:</b> Straight plug: 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)										
<b>S06:</b> Straight plug: 200°C *** (nickel, s.steel, bronze)										
<b>01:</b> In line receptacle 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)										
<b>S01:</b> In line receptacles 200°C *** (nickel, s.steel, bronze)										
<b>02:</b> P00 without rear threat (no poss. for backshell) 175°C (O.D. cadmium, g.zinc cobalt, ni-PTFE, b.zinc nickel)										
<b>S02:</b> PS00 without rear threat (no poss. for backshell) 200°C *** (nickel, s.steel, bronze)										
<b>Contact type</b>										
<b>R:</b> Crimp contacts (or connector delivered without contact) Omit for PC tail contacts, Durmalon plating and black zinc nickel plating										
<b>Ground Plane receptacle and Quadrax contact options</b>										
<b>G:</b> conductive insert										
<b>Q:</b> insert compatible with quadrax or differential twinax contacts **										
<b>GQ:</b> conductive insert compatible with quadrax or differential twinax contacts Omit for standard receptacle (without conductive insert) and insert without quadrax contact										
<b>Class</b>										
<b>W:</b> Olive Drab Cadmium plating (on aluminium or composite)										
<b>F:</b> Nickel Plating (on aluminium or composite) ✓										
<b>K:</b> Passivated Stainless Steel ✓										
<b>S:</b> Nickel plated Stainless Steel ✓										
<b>B:</b> Marine Bronze (copper aluminium alloy) ✓										
<b>DT:</b> Durmalon plating (Nickel - PTFE) ✓										
<b>Z:</b> Green zinc Cobalt plated aluminium ✓										
<b>ZN:</b> Black Zinc Nickel plated aluminium ✓										
<b>PC Tail Contacts</b>										
Omit for crimp contacts										
<b>CI:</b> standard PCB contacts										
<b>LI:</b> long tail PCB contacts										
<b>Shell size and Contact arrangement ***</b> See section "Insert Arrangements"										
<b>Contact type</b>										
<b>P:</b> Pin (500 cycles)										
<b>S:</b> Socket (500 cycles)										
<b>H:</b> Pin (1500 cycles - CTV only)										
<b>J:</b> Socket (1500 cycles - CTV only)										
<b>Polarization</b> Blank for normal or <b>A, B, C, D, E</b> . See coding system, section "Insert Arrangements"; sub-section "coding polarization"										
<b>Contacts</b> Omit for connectors delivered with contacts										
<b>LC:</b> Connector delivered without contacts										
<b>Deviation</b>										
<b>F404 / F404LF / F404LFC:</b> Tinned PCB contacts (lead tinned / silver tinned / silver-copper tinned)										
<b>F485</b> (for TVS06 RB only): Coupling nut conforms to CECC75 - 201 - 002A (for arctic gloves)										
<b>F459 / F459LF / F459LFC:</b> stand-off receptacle (lead tinned / silver tinned / silver-copper tinned)										
<b>F472</b> Integrated backshells										
For other deviations (FXXX), please <i>consult us</i> .										

\*\* For Quadrax or dif. Twinax compatible inserts, please omit the "S" corresponding to 200°C compatibility when applicable, in the P/N. Ex: CTV07RQGQF17 52PLC  
For other arrangements, shell, coding or deviation, please consult us.

\*\*\*For high-density contact arrangement, please omit the « S » corresponding to 200°C compatibility in the P/N. High-density inserts are +175°C maxi compatible. Ex: TVP 00 RF 09 09 S

✓: RoHS compliant



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