

# Amphenol®

## MIL-DTL-38999

### Series III Core Range



## BLACK ZINC NICKEL

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Amphenol Ltd has responded to the requirements of the commercial, industrial and military markets to move away from the use of hazardous materials such as cadmium, by developing the RoHS compliant Black Zinc Nickel plating. This is available on a wide variety of connectors including proprietary MIL-DTL-38999. This conductive and non-reflective black finish is approved for 500hrs salt spray endurance and is fast becoming the new Defence Industry standard.



### Key Features

- **Environmental** RoHS compliant, Cadmium free
- **Salt Spray** 500hrs endurance with shell-to-shell continuity  $<5\text{m}\Omega$
- **Shell-to-Shell Continuity** Less than  $<2.5\text{m}\Omega$  initially
- **Mechanical** 500 mating cycles, non magnetic
- **Temperature Range**  $-65^{\circ}$  to  $+175^{\circ}\text{C}$  in accordance with MIL-DTL-38999
- **Compatibility** No significant galvanic reaction with cadmium, zinc cobalt or electroless nickel plated parts
- **Availability** Deployed on standard connector ranges such as MIL-DTL-38999, MIL-C-26482, Rhino Power

## Amphenol: MIL-DTL-38999 Capability

The Amphenol Corporation offers the largest selection of MIL-DTL-38999 connectors in the world with fully QPL approved manufacturing sites in the UK, USA, France and India.

Amphenol Ltd, based in Whitstable, UK, designs, manufactures and markets circular, rectangular, electronic, fibre-optic and EMI/EMP filtered connectors as well as a variety of special application interconnect systems.

This product catalogue defines Amphenol Ltd's core range of MIL-DTL-38999 Series III connectors that are aligned technically, commercially and logistically to the demands of an ever changing and highly competitive marketplace.

By focusing on a preferred range of insert arrangements and shell styles, Amphenol Ltd is able to drive efficiencies through manufacturing processes which enable reduced lead-times and MOQs thus making Amphenol Ltd a highly effective, cost efficient supply chain partner.

The core MIL-DTL-38999 Series III product range highlighted within this catalogue is available as either proprietary or fully QPL qualified and in plating finishes including Cadmium or Black Zinc-Nickel. Other plating finishes and shell materials such as Stainless Steel, Nickel Aluminium Bronze and Titanium are also available.

To meet the demands of the markets and applications MIL-DTL-38999 connectors can also be supplied with integrated EMI and EMP filters, hermetic sealing and as cable harnesses or equipment panels.

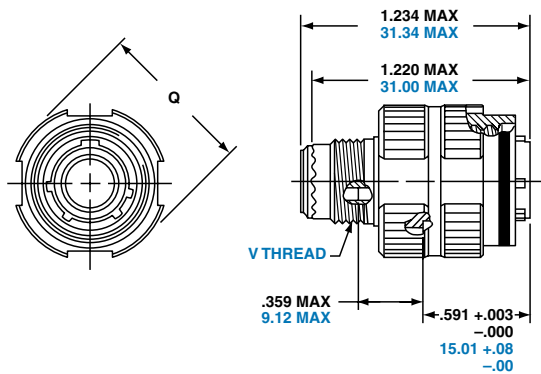
Amphenol Ltd has aligned this selected product offering with Value Added Distribution partners who can deliver small and medium volume connector orders in as little as 48hrs. Distribution partners provide customers with a one-stop source for all needs from concept and prototype phases, through production, to lifetime programme support.

For details of Amphenol Ltd's complete range of MIL-DTL-38999 connectors please see the full catalogue at [www.amphenol.co.uk/38999](http://www.amphenol.co.uk/38999)



## Styles

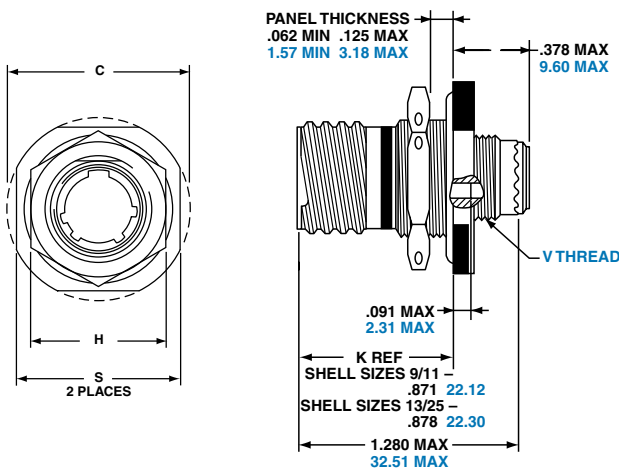
### TV06 (D38999/26) - Straight Plug



| Shell Size | MS Shell Size Code | Q Max. | V Thread Metric |
|------------|--------------------|--------|-----------------|
| 9          | A                  | 21.8   | M12X1-6g        |
| 11         | B                  | 25.0   | M15X1-6g        |
| 13         | C                  | 29.4   | M18X1-6g        |
| 15         | D                  | 32.5   | M22X1-6g        |
| 17         | E                  | 35.7   | M25X1-6g        |
| 19         | F                  | 38.5   | M28X1-6g        |
| 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.

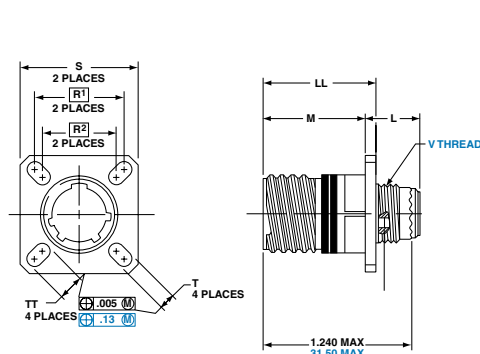
### TV07 (D38999/24) - Jam Nut Receptacle



| Shell Size | MS Shell Size Code | C Max. | H Hex +.43 / -.41 | S ±.25 | V Thread Metric |
|------------|--------------------|--------|-------------------|--------|-----------------|
| 9          | A                  | 30.45  | 22.23             | 26.97  | M12X1-6g        |
| 11         | B                  | 35.20  | 25.40             | 31.75  | M15X1-6g        |
| 13         | C                  | 38.38  | 30.18             | 34.93  | M18X1-6g        |
| 15         | D                  | 41.55  | 33.32             | 38.10  | M22X1-6g        |
| 17         | E                  | 44.73  | 36.53             | 41.28  | M25X1-6g        |
| 19         | F                  | 49.50  | 39.67             | 46.02  | M28X1-6g        |
| 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



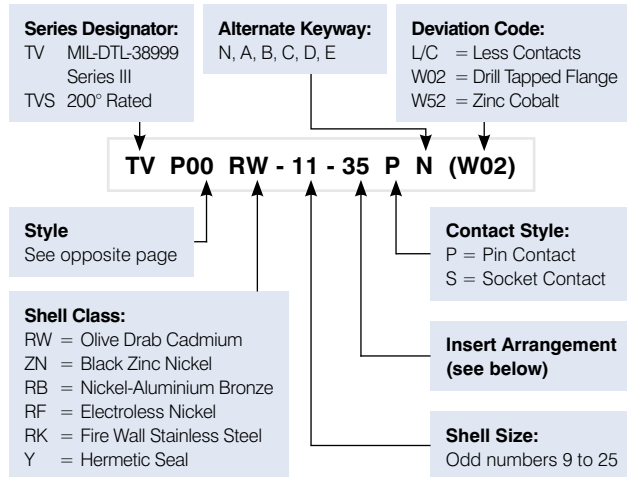
| Shell Size | MS Shell Size Code | L Max. | M +.00 / -.13 | R <sup>1</sup> | R <sup>2</sup> | S Max. | T ±.20 | V Thread Metric | LL +.15 / -.00 | TT ±.20 |
|------------|--------------------|--------|---------------|----------------|----------------|--------|--------|-----------------|----------------|---------|
| 9          | A                  | 11.91  | 20.83         | 18.26          | 15.09          | 24.1   | 3.25   | M12X1-6g        | 22.99          | 5.49    |
| 11         | B                  | 11.91  | 20.83         | 20.62          | 18.26          | 26.5   | 3.25   | M15X1-6g        | 22.99          | 4.93    |
| 13         | C                  | 11.91  | 20.83         | 23.01          | 20.62          | 28.9   | 3.25   | M18X1-6g        | 22.99          | 4.93    |
| 15         | D                  | 11.91  | 20.83         | 24.61          | 23.01          | 31.3   | 3.25   | M22X1-6g        | 22.99          | 4.39    |
| 17         | E                  | 11.91  | 20.83         | 26.97          | 24.61          | 33.7   | 3.25   | M25X1-6g        | 22.99          | 4.93    |
| 19         | F                  | 11.91  | 20.83         | 29.36          | 26.97          | 36.9   | 3.25   | M28X1-6g        | 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

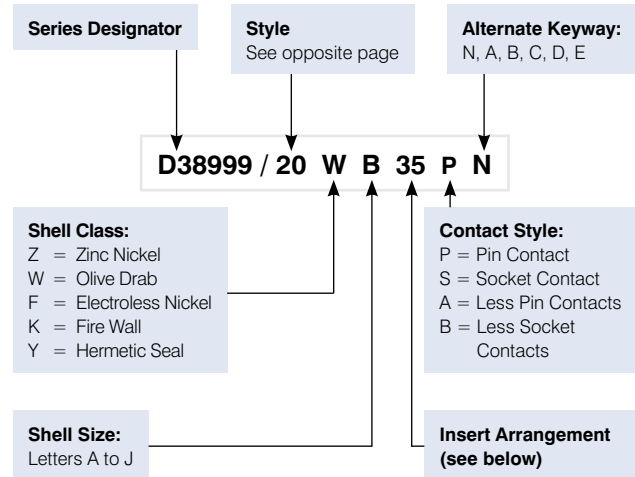
All dimensions, in mm, for reference only.

## D38999 Part Numbering

### Proprietary



### MIL-DTL-38999

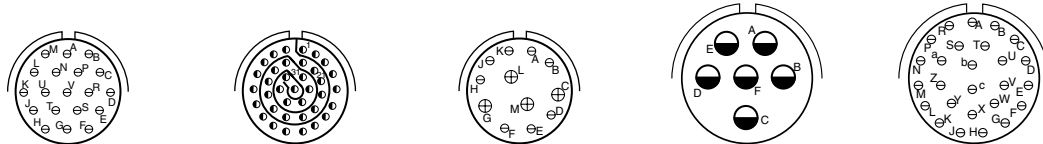


## Insert Arrangements

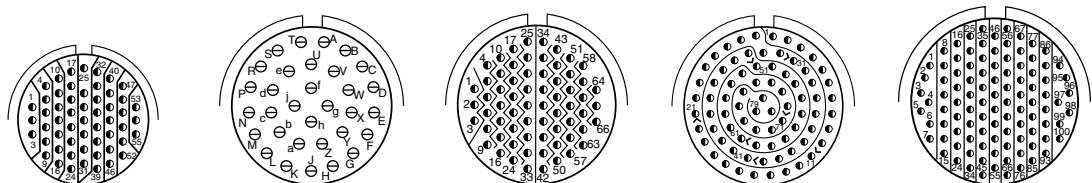
Front face of pin inserts illustrated



|                        | 9-35/A35 | 9-98/A98 | 11-35/B35 | 11-98/B98 | 13-35/C35 | 13-98/C98 |
|------------------------|----------|----------|-----------|-----------|-----------|-----------|
| <b>Service Rating</b>  | M        | I        | M         | I         | M         | I         |
| <b>No. of Contacts</b> | 6        | 3        | 13        | 6         | 22        | 10        |
| <b>Contact Size</b>    | 22D      | 20       | 22D       | 20        | 22D       | 20        |



|                        | 15-19/D19 | 15-35/D35 | 15-97/D97 | 17-6/E6 | 17-26/E26 |
|------------------------|-----------|-----------|-----------|---------|-----------|
| <b>Service Rating</b>  | I         | M         | I         | I       | I         |
| <b>No. of Contacts</b> | 19        | 37        | 8         | 6       | 26        |
| <b>Contact Size</b>    | 20        | 22D       | 20        | 12      | 20        |



|                        | 17-35/E35 | 19-32/F32 | 19-35/F35 | 21-35/G35 | 23-35/H35 |
|------------------------|-----------|-----------|-----------|-----------|-----------|
| <b>Service Rating</b>  | M         | I         | M         | M         | M         |
| <b>No. of Contacts</b> | 55        | 32        | 66        | 79        | 100       |
| <b>Contact Size</b>    | 22D       | 20        | 22D       | 22D       | 22D       |

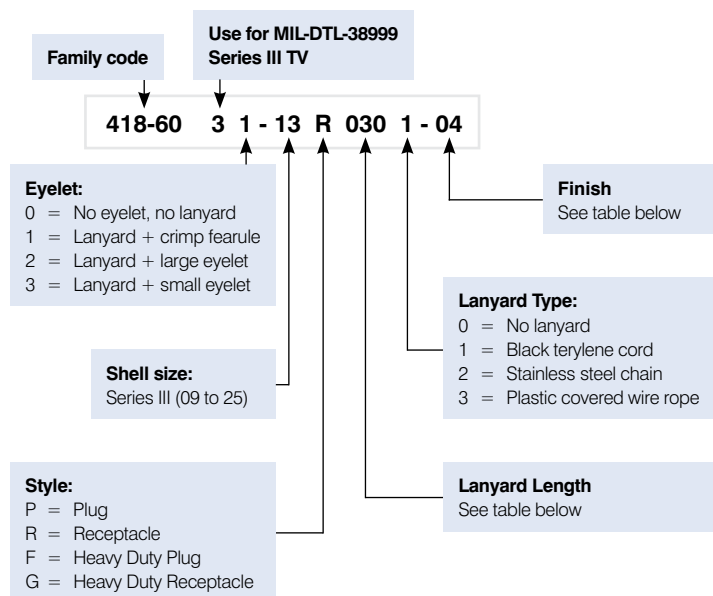
|                       |   |    |    |    |    |        |
|-----------------------|---|----|----|----|----|--------|
| <b>Contact Legend</b> |   |    |    |    |    |        |
|                       | 8 | 10 | 12 | 16 | 20 | 22D 23 |

## Accessories and tooling

### Backshells



### Cap



| Lanyard Length (all +/- 0.25 inches) |                   | Finish |                          |
|--------------------------------------|-------------------|--------|--------------------------|
| 030                                  | 3 inches (75mm)   | -01    | Unplated                 |
| 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                  |
|---------------------------------------------|-------------------------------------------|-------------------------------------------|
| 12 Pin and Socket                           | M22520/1-01                               | M22520/1-04                               |
| 16 Pin and Socket                           | M22520/1-01<br>M22520/7-01                | M22520/1-04<br>M22520/7-04                |
| 20 Pin and Socket                           | M22520/1-01<br>M22520/2-01<br>M22520/7-01 | M22520/1-04<br>M22520/2-10<br>M22520/7-08 |
| 22D Pin                                     | M22520/2-01<br>M22520/7-01                | M22520/2-09<br>M22520/7-07                |
| 22D Socket<br>Series I, III                 | M22520/2-01<br>M22520/7-01                | M22520/2-07<br>M22520/7-05                |
| 22D Socket Series II                        | M22520/2-01<br>M22520/7-01                | M22520/2-06<br>M22520/7-06                |
| 8 Twinax Center Pin<br>and Socket           | M22520/2-01                               | M22520/2-37                               |
| 8 Twinax Intermediate<br>Outer Pin & Socket | M22520/5-01                               | M22520/5-200                              |

| Contact Size/Type                  | Crimping Tool | Turret Die or Positioner      |
|------------------------------------|---------------|-------------------------------|
| 8 Coaxial Inner<br>Pin and Socket  | M22520/2-01   | M22520/2-31                   |
| 8 Coaxial Outer Pin<br>and Socket  | M22520/5-01   | M22520/5-05<br>Die Closure B  |
|                                    | M22520/5-01   | M22520/5-41<br>Die Closure B  |
|                                    | M22520/10-01  | M22520/10-07<br>Die Closure B |
| 16 Coaxial Inner<br>Pin and Socket | M22520/2-01   | M22520/2-35                   |
| 16 Coaxial Outer<br>Pin and Socket | M22520/4-01   | M22520/4-02                   |
| 12 Coaxial Inner<br>Pin and Socket | M22520/2-01   | M22520/2-34                   |
| 12 Coaxial Outer<br>Pin and Socket | M22520/31-01  | M22520/31-02                  |
| 10 (Power)                         | TP-201423     |                               |

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 | Pins             | Socket           | Seal Plug    |
|--------------|------------------|------------------|--------------|
| 4            | Contact Factory  | Contact Factory  | N/A          |
| 8 (Coax)     | M39029/60-367    | M39029/59-366    | MS27488-8-3  |
| 8 (Power)    | Contact Factory  | Contact Factory  | MS27488-8-3  |
| 8 (Twinax)   | M39029/90-529    | M39029/91-350    | MS27488-8-3  |
| 12           | M39029/58-365    | M39029/56-353    | MS27488-12-2 |
| 12 (Coax)    | 418-840-12001-02 | 418-841-12001-02 | MS27488-12-2 |
| 16           | M39029/58-364    | M39029/56-352    | MS27488-16-2 |
| 16 (Coax)    | 418-840-16001-02 | 418-841-16001-02 | MS27488-16-2 |
| 20           | M39029/58-363    | M39029/56-351    | MS27488-20-2 |
| 22D          | M39029/58-360    | M39029/56-348    | MS27488-22-2 |

## Value Add Distributors



### ACAL BFi

3 The Business Centre,  
Molly Millars Lane, Wokingham,  
Berkshire, RG41 2EY, UK

T: +44 (0)1189 788878  
F: +44 (0)1189 776095

[www.acalbfi.com](http://www.acalbfi.com)



### MPS Electronic Vertriebs GmbH

Pfarrer-Huber-Ring 8, 83620  
Feldkirchen-Westerham, Germany

T: +49 (0)8063 81010  
F: +49 (0)8063 8686

[www.mps-electronic.com](http://www.mps-electronic.com)



### PEI-Genesis UK Ltd

George Curl Way,  
Southampton,  
Hampshire, SR18 2RZ, UK

T: +44 (0)844 871 6060  
F: +44 (0)844 871 6020

[www.peigenesis.com](http://www.peigenesis.com)



### Quittner & Schimek

s.r.o. Komenského 304,  
509 01 Nová Paka,  
Czech Republic

T: +420 493 766311  
F: +420 493 721107

[www.qscomp.cz](http://www.qscomp.cz)

# Worldwide sales contacts

## Europe

**Amphenol Ltd, UK**  
Thanet Way, Whitstable  
Kent, CT5 3JF  
United Kingdom  
T: +44 1227 773 200

**Amphenol Socapex, France**  
948, promenade de l'Arve BP29  
74311 Thyez Cedex  
France  
T: +33 4 50 89 28 00

**Amphenol Air LB, France**  
10 rue champ Raymond  
08110 Carignan  
France  
T: +33 3 24 22 32 70

**Amphenol AIR LB GmbH, Germany**  
Am Kleinbahnhof 4  
66740 Saarlouis  
Germany  
T: +49 6831 981 00

**Amphenol Nordic**  
T: +46 702 129 200

**Amphenol Switzerland  
and South Centre**  
*Switzerland, Slovenia,  
Serbia, Montenegro,  
Yugoslavia, Greece,  
Bulgaria*  
948, promenade de l'Arve BP29  
74311 Thyez Cedex  
France  
T: +33 4 50 89 28 00

**Amphenol Italy**  
Via Barbaiana n.5  
20020 Lainate, Milano  
Italy  
T: +39 293 254 214

**Amphenol Benelux**  
Zademaker 121 NL  
2401 PD Alphen aan den Rijn  
The Netherlands  
T: +31 172 444 903

**Amphenol Iberica**  
Edificio Burgosol, Oficina nr 55  
Comunidad de Madrid, 35 bis Las  
Rozas (Madrid)  
Spain  
T: +34 91 640 73 06

**Amphenol Poland and  
Central East Europe**  
*Austria, Poland,  
Czech Republic,  
Slovakia, Romania*  
Wiener gasse 68  
2380 Perchtoldsdorf  
Austria  
T: +43 699 10396 071

## North America

**Amphenol PCD USA**  
72 Cherry Hill Drive  
Beverly, MA. 01915-1065  
USA  
T: +1 978 624 3400

**Amphenol Canada Corporation**  
605 Milner Avenue  
Toronto, Ontario  
Canada  
M1B 5X6  
T: +1 416 291 4401

## Asia

**Amphenol Daeshin, Korea**  
558 SongNae-2 Dong, SoSa-Gu,  
Bucheon City, Gyeonggi-do  
422-040, Korea  
T: +82 32 610 3800

**Amphenol Interconnect India  
Private Limited**  
105 Bhosari Industrial Area  
Pune 411 026  
India  
T: +91 203 068 8304

**Amphenol Japan**  
471-1 Deba, Ritto-City  
Shiga 520-3041  
Japan  
T: +81 77 553 8501

**Amphenol PCD CO Ltd, China**  
Building 21, 1st Liao Keng Industrial  
Zone, Shi Yan Street  
Bao An District, Shenzhen 518108  
China  
T: +86 755 8173 8000

## Other areas

**Amphenol Argentina**  
Av. Callao 930 2do piso Oficina B  
"Plaza" C1023 – AAP, Buenos Aires  
Argentina  
T: +54 11 4815 6886

**Amphenol Australia Pty Limited**  
2 Fiveways Blvd, Keysborough,  
Melbourne, Victoria 3173  
Australia  
T: +61 3 8796 8888

**Amphenol Do Brazil**  
Rua Diogo Moreira  
132, 20 andar, rooms 2001-2-3  
CEP: 05423 010 Sao Paulo SP  
Brazil  
T: +55 11 3815 1003

**Bar-Tec Ltd, Israel**  
3 Hagavish Street, K fir-Barkan Bldg  
East Industrial Zone  
Kfar-Sava, 44102  
Israel  
T: +972 9 764 4100

**Amphenol Mexico**  
Prolongacion Reforma 61-6 B2  
Col Passo de las Lomas CP.013130  
Mexico  
T: +52 55 5258 9984

**Amphenol Russia**  
Yaroslavskaja Street 8  
129164 Moscow  
Russia  
T: +7 495 937 6341

**Amphenol South Africa**  
30 Impala Road  
2196 Chislehurst  
Sandton  
South Africa  
T: +27 11 783 9517

**Amphenol Turkey**  
Sun Plaza 15 Kat:  
15 Maslak Hah. Bilim  
Sok. No.5  
Sisli/Istanbul, 34398  
Turkey  
T: +90 212 367 92 19

# Amphenol®

Printed and distributed by Amphenol Ltd Thanet Way Whitstable Kent CT5 3JF  
T: +44 (0) 1227 773200 | E: [info@amphenol.co.uk](mailto:info@amphenol.co.uk) | [www.amphenol.co.uk](http://www.amphenol.co.uk)

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