



TE – Deutsch Products



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Connettori I/O

Circolari



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Circular Products Overview

MIL-DTL-26482

- Navy Spec
- Designed to eliminate failure modes characteristic of many previous devices
- Operating Temp: -55C to 125C

- AFD – Bayonet
- Series I Inactive
- Series II Reactivated



MIL-DTL-83723

- Air Force Spec
- Designed to upgrade older existing connector system in the field
- Operating Temp: -65C to 200C

- DL - Bayonet, Series I transferred to M26482
- DBA30 – Threaded, Series III



MIL-DTL-81511

- Air Force Spec
- High Density (up to 155 positions)
- A815 sealed & feature “grounding fingers” ensuring receptacle to plug conductivity

- A815 - Bayonet with long shell version (100% scoop proof)
- B815 - Bayonet with short shell version (not scoop proof)



AS29600

- Navy / SAE spec
- 1st Composite circular
- Backshell to backshell EMI/RFI performance from 100 MHz - 10 GHz.
- Operating Temp: -55C to 175C

- DG123 – Threaded 81511 inserts for High density
- DG123A – 38999 inserts standard density



Deutsch MIL

Series	Mil Spec	Type	Usage
DL, DLB	83723 Series I	Bayonet	Replacement
DBA30	83723 Series III	Threaded	Replacement
AFD, XAFD	26482	Bayonet	Replacement
815	81511	Bayonet	Replacement
DJT	38999 Series I	Bayonet	New Design
DJL	38999 Series II	Bayonet	New Design
DTS	38999 Series III	Threaded	New Design
ACT	38999 Series III	Threaded	New Design
DIV	38999 Series IV	Breech	New Design

38999 Serie III Focus

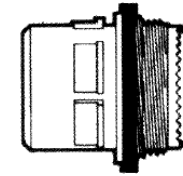
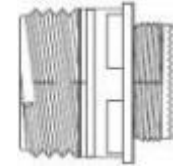
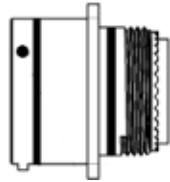
ACT	DTS
 The image shows two components of the ACT connector. On the left is a square metal shell with four mounting holes and a central circular opening. On the right is a blue plastic cap with a circular grid of pins on its face.	 The image shows two components of the DTS connector. On the left is a square metal shell with a circular grid of pins on its face. On the right is a circular cap with a grid of pins on its face.
<ul style="list-style-type: none">• Shell in Composito• 40 % più leggero del DTS• 2000 ore salt spray• Shell resiliente all'impatto	<ul style="list-style-type: none">• Shell in Alluminio• 500 ore salt spray for ODCAD• 50 ore Ni per resist. alla corrosione

Introduzione – Connettori Deutsch MIL-C-38999

- MIL-C-38999 is one of the most important specification for Mil Spec Circular Connector
- Preferred for new design by the Military
- Used for virtually all Aerospace and Defense Applications
- High Density : up to 128 pos
- Consists of 4 Series (I, II, III, IV) . All of them are listed on QPL
- Series K Stainless Steel Availability



Introduzione – Connettori Deutsch MIL-C-38999



Series	I	II	III	IV
Mating Style	Scoop Proof 90° Bayonet	Low Profile 90° Bayonet	Scoop Proof 360° Threaded	Scoop Proof 90° Breech
Shell Material	Aluminum	Aluminum	Aluminum, Composite	Aluminum
Shell Size	9	2	9	8
Contact arrangements	50	2	Metal:50 Composite: 56	47
Advantage	Fast connect/disconnect	Fast connect/disconnect. Compact size	Anti-rotation device (plug). Rugged. Light weight Composite shell option	Grounding before contact
EMI protection	Yes	Yes	Yes	Yes
Production site	Deutsch USA			

Introduzione – Connettori Deutsch MIL-C-38999

Application	User	Series
Military Aircraft	Lockheed Martin	I, II, III, IV
Commercial Aircraft *	Airbus, Embraer	I, II, III
Ground Vehicles	MOOG	I, II, III
Tank	General Dynamics	I, II, III
Helicopter	Sikorsky	I, II, III, IV
Surface to Air Missile System	Lockheed Martin	IV
Marine	Raytheon	I, II, III
UAV	General Atomics	I, II, III



Connettori di potenza – (DTS-HC)

38999 SIII QPL shells

150A – 300A contacts

Removable crimp contacts

Power & Signal layouts

Support & Seal backshell

ABS Qualified (ABS 2133)



38999 - Black Zinc Nickel e Nickel PTFE :

L'alternativa al cadmio



38999 Black Zinc Plating - Connector

Metal																		
Military P/N	D38999/	20	F	D	19	P	N	Deutsch P/N	DTS	20	F	15-	19	P	N	XXXX		
Mil Spec.												Mil Spec.						
Shell Type												Shell Type						
20 = Square Flange Recep.												20 = Square Flange Recep.						
24 = Jam Nut Recep.												24 = Jam Nut Recep.						
26 = Straight Plug												26 = Straight Plug						
Finish												Finish						
F = Nickel Z = Black Zinc Nickel												F = Nickel Z = Black Zinc Nickel						
W = Olive Drab T = Nickel - PTFE												W = Olive Drab T = Nickel - PTFE						
Shell Size												Shell Size						
A=9, B=11, C=13, D=15, E=17,												A=9, B=11, C=13, D=15, E=17,						
F=19, G=21, H=23, J=25												F=19, G=21, H=23, J=25						
Insert Arrangement												Insert Arrangement						
Contact Type												Contact Type						
P = Pin A = Less Pin												P = Pin A = Less Pin						
S = Socket B = Less Socket												S = Socket B = Less Socket						
Keying Positions												Keying Positions						
N, A, B, C, D, E												N, A, B, C, D, E						
Special Modifications												Special Modifications						
Composite																		
Military P/N	D38999/	20	M	D	19	P	N	Deutsch P/N	ACT	90	M	D	19	P	N	XXXX		
Mil Spec.												Mil Spec.						
Shell Type												Shell Type						
20 = Square Flange Recep.												90 = Square Flange Recep.						
24 = Jam Nut Recep.												94 = Jam Nut Recep.						
26 = Straight Plug												96 = Straight Plug						
Finish												Finish						
M = Nickel												M = Nickel						
J = Olive Drab												J = Olive Drab						
Shell Size												Shell Size						
A=9, B=11, C=13, D=15, E=17,												A=9, B=11, C=13, D=15, E=17,						
F=19, G=21, H=23, J=25												F=19, G=21, H=23, J=25						
Insert Arrangement												Insert Arrangement						
Contact Type												Contact Type						
P = Pin A = Less												P = Pin A = Less						
Pin												Pin						
Keying Positions												Keying Positions						
N, A, B, C, D, E												N, A, B, C, D, E						
Special Modifications												Special Modifications						



38999 Black Zinc Plating – Connector

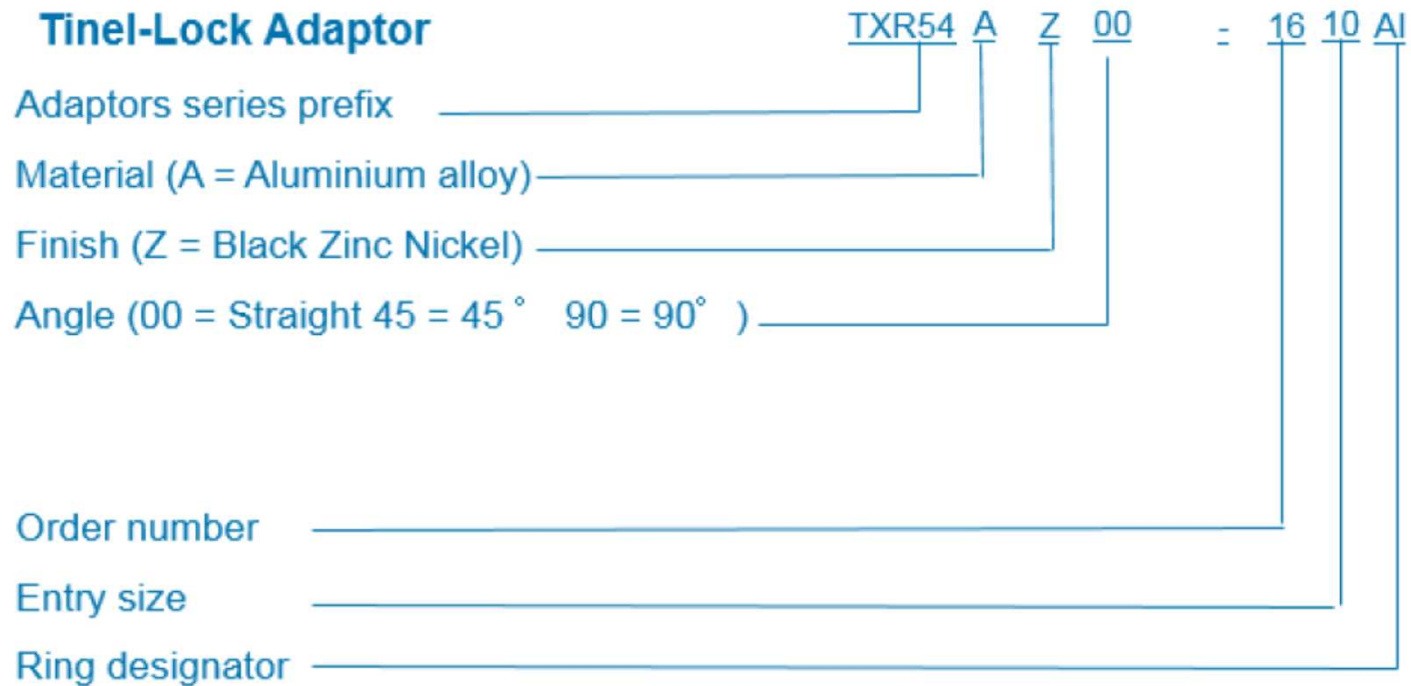
Black Zinc Nickel plated MIL-DTL-38999, a RoHS compliant and approved for 500hrs salt spray endurance.

- **Environmental**
 - RoHS compliant, Cadmium free
- **Spray**
 - 500hrs salt spray endurance
- **Shell Continuity**
 - Less than $<2.5\text{m}\Omega$ initially
- **Mechanical**
 - 500 mating cycles, non magnetic
- **Temperature Range**
 - -65° to $+175^{\circ}\text{C}$

38999 Black Zinc Plating - Backshell



Tinel-Lock Adaptor



38999 Black Zinc Plating - Backshell

Black Zinc Nickel plated, a RoHS compliant and approved for 500 hrs salt spray endurance.

- **Environmental**
 - RoHS compliant, Cadmium free
- **Spray**
 - 500 hrs salt spray endurance
 - AS85049 approved for 1000 hrs salt spray endurance
- **Shell Continuity**
 - Less than $<2.5\text{m}\Omega$ initially
- **Mechanical**
 - non magnetic
- **Temperature Range**
 - -65° to $+175^{\circ}\text{C}$

Black Zinc Nickel plating is available on all Raychem brand backshells including Spin Coupling, Bandstrap, Tinel Adapters and HexaShield Adapters.

38999 Nickel PTFE Plating

Metal								Deutsch P/N								
Military P/N	<u>D38999/</u>	<u>20</u>	<u>F</u>	<u>D</u>	<u>19</u>	<u>P</u>	<u>N</u>	Deutsch P/N	<u>DTS</u>	<u>20</u>	<u>F</u>	<u>15-</u>	<u>19</u>	<u>P</u>	<u>N</u>	<u>XXXX</u>
Mil Spec.								Mil Spec.								
Shell Type								Shell Type								
20 = Square Flange Recep. 24 = Jam Nut Recep. 26 = Straight Plug								20 = Square Flange Recep. 24 = Jam Nut Recep. 26 = Straight Plug								
Finish								Finish								
F = Nickel Z = Black Zinc Nickel W = Olive Drab T = Nickel - PTFE								F = Nickel Z = Black Zinc Nickel W = Olive Drab T = Nickel - PTFE								
Shell Size								Shell Size								
A=9, B=11, C=13, D=15, E=17, F=19, G=21, H=23, J=25								A=9, B=11, C=13, D=15, E=17, F=19, G=21, H=23, J=25								
Insert Arrangement								Insert Arrangement								
Contact Type								Contact Type								
P = Pin A = Less Pin S = Socket B = Less Socket								P = Pin A = Less Pin S = Socket B = Less Socket								
Keying Positions								Keying Positions								
N, A, B, C, D, E								N, A, B, C, D, E								
Special Modifications								Special Modifications								
Composite								Deutsch P/N								
Military P/N	<u>D38999/</u>	<u>20</u>	<u>M</u>	<u>D</u>	<u>19</u>	<u>P</u>	<u>N</u>	Deutsch P/N	<u>ACT</u>	<u>90</u>	<u>M</u>	<u>D</u>	<u>19</u>	<u>P</u>	<u>N</u>	<u>XXXX</u>
Mil Spec.								Mil Spec.								
Shell Type								Shell Type								
20 = Square Flange Recep. 24 = Jam Nut Recep. 26 = Straight Plug								90 = Square Flange Recep. 94 = Jam Nut Recep. 96 = Straight Plug								
Finish								Finish								
M = Nickel J = Olive Drab								M = Nickel J = Olive Drab								
Shell Size								Shell Size								
A=9, B=11, C=13, D=15, E=17, F=19, G=21, H=23, J=25								A=9, B=11, C=13, D=15, E=17, F=19, G=21, H=23, J=25								
Insert Arrangement								Insert Arrangement								
Contact Type								Contact Type								
P = Pin A = Less Pin Pin								P = Pin A = Less Pin Pin								
Keying Positions								Keying Positions								
N, A, B, C, D, E								N, A, B, C, D, E								
Special Modifications								Special Modifications								



38999 Nickel PTFE Plating

- Characteristics:
 - Environmental:
 - RoHS Compliant, Cadmium free
 - Spray:
 - 500 hours salt spray endurance
 - Shell Continuity:
 - Less than $<2.5\text{m } \Omega$ initially
 - Mechanical:
 - 500 mating cycles, non magnetic
 - Temperature Range:
 - -65° to $+175^{\circ}\text{C}$

Legacy Products

Bayonet

- HBS (Pat. 105/26482 SI)
- LL (MIL-C-81511 compatible)
- RR and 460 (Pat. 602)
- SLPT (Pat. 603)
- HDJ (JN1003)

Screw thread

- HAN (5015 type)
- TDB 1553B Databus (BS 9522)

Other

- AA70 Push-Pull
- Pressure bungs
- Contacts - signal, coax, power



Legacy Push-Pull Products Overview

DD

- Ball Lock Coupling
- Performance requirements of AS81703

DM

- Ball Lock Coupling
- 3 – 61 positions
- 20 – 12 AWG
- Performance req. of MIL-DTL-26482

DS

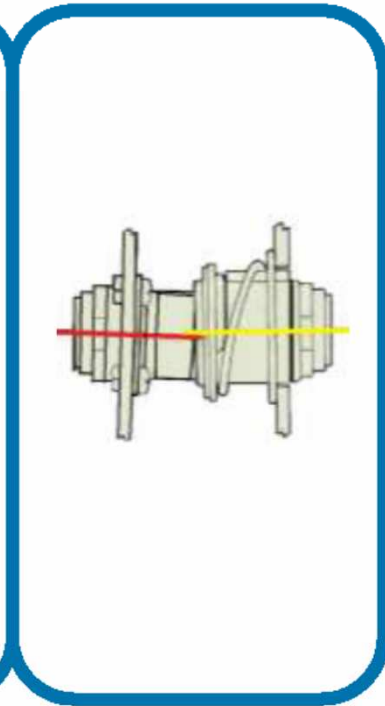
- Ball Lock Coupling
- 3 – 61 positions
- 20 – 12 AWG
- Performance req. of MIL-DTL-26482
- MDS series - Non environmental

RSM

- High Density
- 20 – 16 AWG
- Performance requirements of MIL-C-81511

D817

- AS81703
- Push-Pull
- Rack & Panel
- Utilizes 39029 contacts



Connettori ad alta densità

38999 SIII QPL shells

Double Density - Halves
connector count !

4 contact layout options

3 Amps per contact
24-28AWG

Crimp removable / scoop
proof contacts

Fully sealed interface and
wire seal

Wildcat
38999



Bayonet, PCB and EMI
Filter options

Connettori ad alta densità

Very compact and
lightweight

Based on proven EFA and
AS products

4 contact layout options

3 to 5 Amps per contact
22-24AWG / 24-28AWG

Crimp removable / scoop
proof contacts

Fully sealed interface and
wire seal

Wildcat
Micro



Customizations and Unique Features

- Custom Modifications
- Space Grade
- Contacts modifications

RFI Grounding



PCB boxer
Standoff
Series III

Light weight
Composite
Commercial Series III
– BVD Series

Connettori I/O Rettangolari



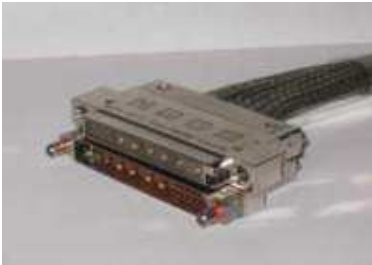
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Rectangular Products Overview

Micro-D



ABC's



CTJ Series



RE Series



M83513 - Micro-D

Microdot (TE)

Standard M83513 products per QPL for example:

- Solder cup contacts /01, /02
- Factory potted Pigtail wires /03, /04
- Hardware /05
- Plastic version solder cup /06, /07
- Plastic shell pigtail wires /08, /09
- PCB versions /10 to /27
- Slim, custom solutions



Deutsch (TE)

Custom composite and metal versions of M83513 products:

- EMI gasket shell connector
- Integrated RFI plug shell
- Programmable shell keys
- Molded contact insulation arrangements for custom shell requirements
- Straight, 45, and 90 backshell
- Lanyard or T-Latch locking hardware



Example Applications

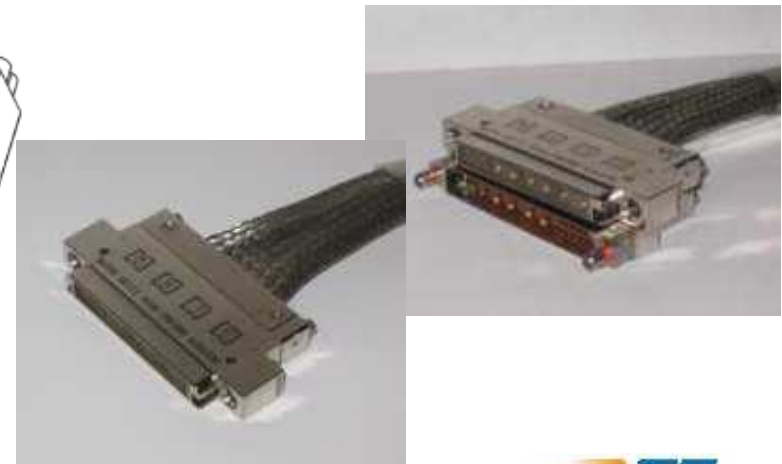
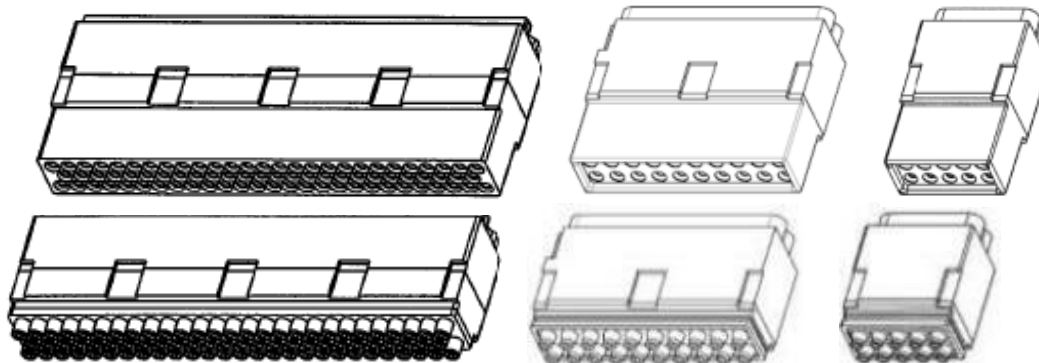
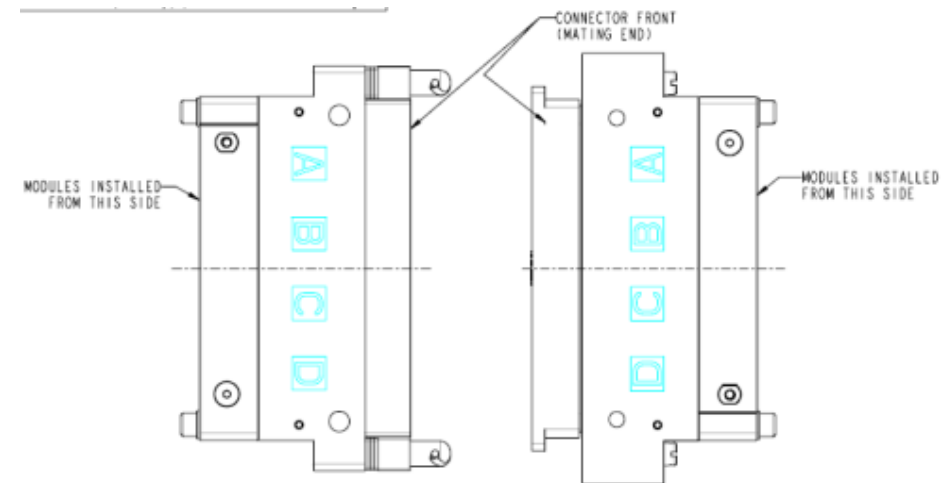
Market	Application	Customer
Weapons Systems	Guided Munitions	Raytheon
Oil Industry	Remote controlled Drill Head	Schlumberger
Satellite Communication	Sensor arrays	JPL/ NASA
Unmanned Aerial Vehicle - UAV	Vision System	L-3 Communications
In Flight Entertainment	Display Systems	Thales



ABC Rectangular Composite Connector

Flexibility...versatility – fundamental concepts in Commercial & Military doctrine, fundamental concepts behind the Deutsch ABC modular composite rectangular interconnect system.

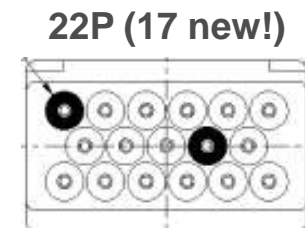
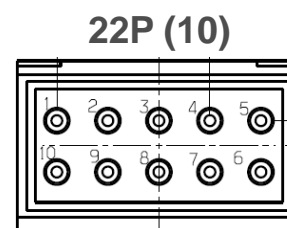
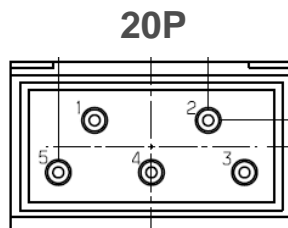
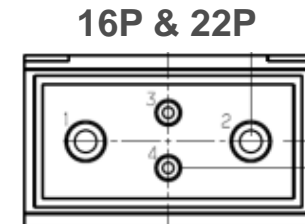
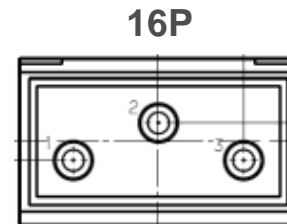
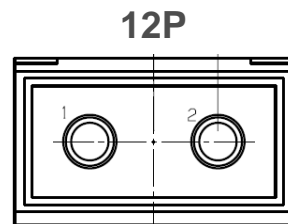
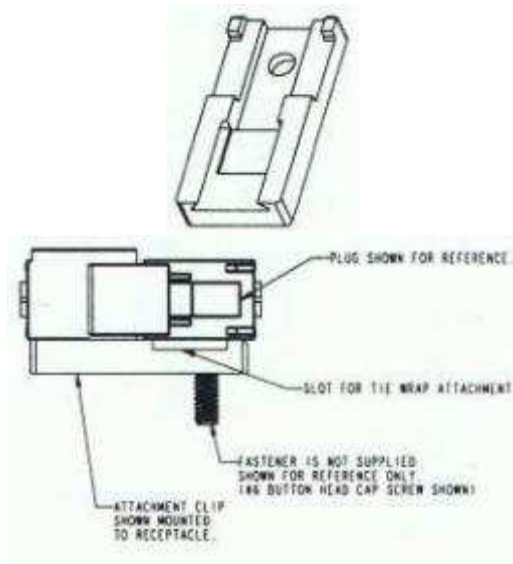
- Nickel plated composite shell
- Modular module design
- Reliable, robust connections
- 1" & 2" changeable keyed shells
- Contacts M39029 series II style
- Contact sizes: 12, 16, 20 and 22
- Wire gauge range 12 – 28



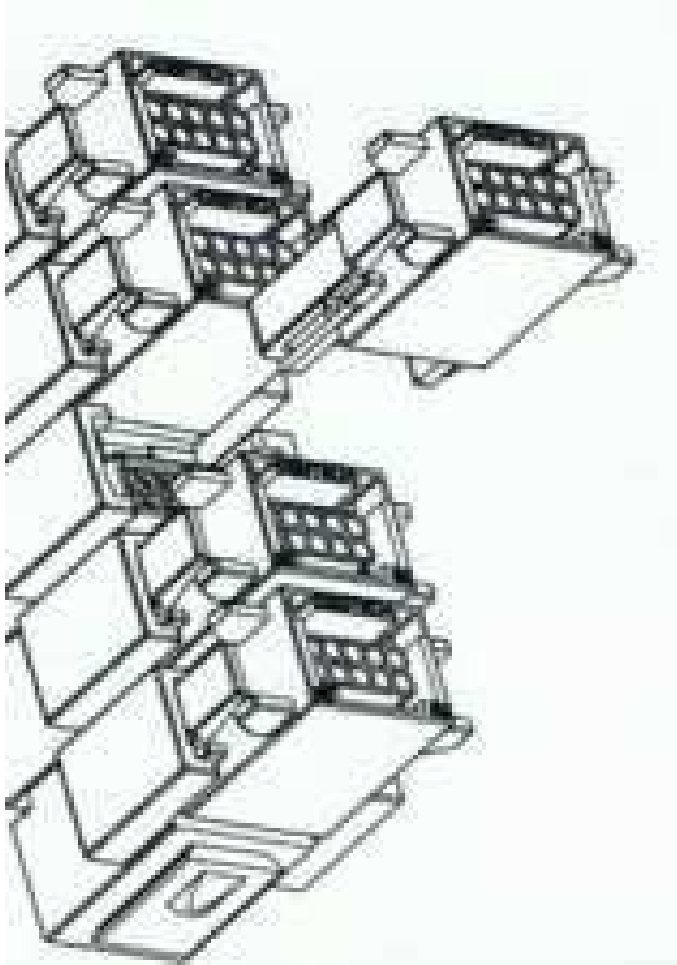
ABC In-Line

Small, lightweight, Modular & Composite

- ½ inch Modular Design, stackable, and mount clip
- Contact sizes: 12, 16, 20 and 22
- Wire gauge range 12 – 28
- Unplated composite shell
- Corrosive fluid resistant materials



ABC In-Line



CTJ MIL-T-81714 (Series II)

CTJ

- Buss Bars are impacted one piece metal construction
- Module housings are all composite construction
 - Mounted in rails
 - Directly into chassis
 - Circuit boards
 - In-line

CTJ4 - Electronic component modules that house discrete components and circuits.

CTJ5 - PC Board, Flat Flex Cable Mountable.



CTG Series MIL-T-81714 (Series II)

CTJ6 Series Plugs & CTJ9 Series Receptacles

- Small, lightweight modules designed simultaneous connect/disconnect of many wires.
 - Flange mounting
 - In-Line mountable

CTJ7 & CTG Series

- Grounding modules are for use in grounding applications that need a small, rugged device that also offers sealing and assembly ease.
 - Flange mounting
 - Stud mountable



CTL MIL-T-81714 (Series II)

CTL, CTM & CTN Series

- In-line junctions for connection two to four wires
- In-line, and multi-junctions for housing and sealing individual components.
- In-Line Mountable



CTL



CTM



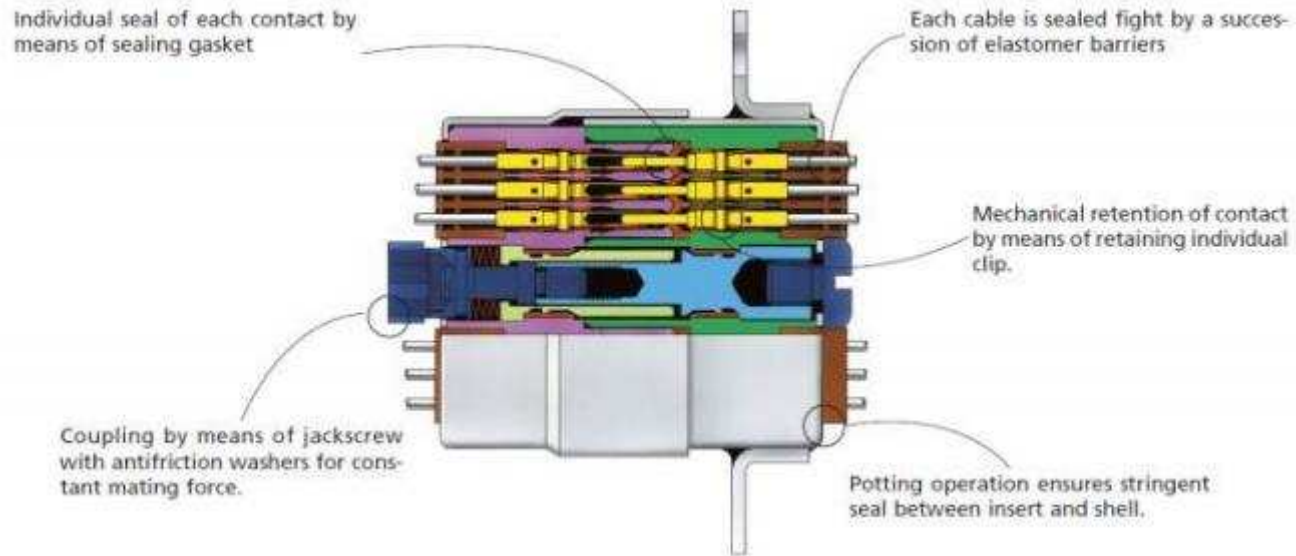
CTN

Example Applications

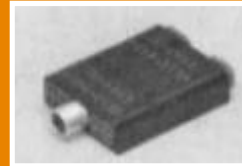
Market	Application	Customer
Military Aviation	Electrical "fix"	Boeing
Commercial Aviation	Line Junction	Bombardier
Military Ground Vehicles	Grounding Lugs	Oshkosk
UAV	Common Termination Filter	General Atomics
Heavy Equipment	Pass-through to PCB	Caterpillar



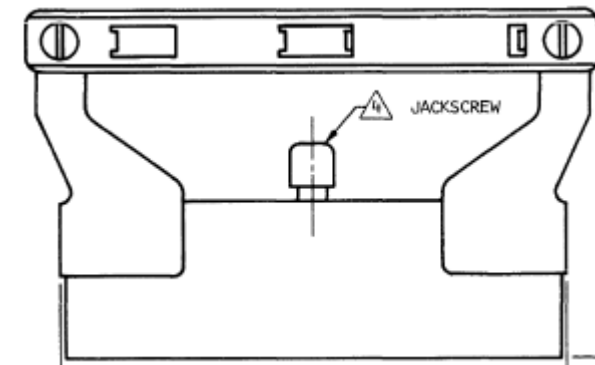
UR-RE High-Density Connectors



- 900 volts @ 5Amps max – wire dependent
- Aluminum & Composite Shells
- Center Jackscrew Design
- Insert/ Removable size 22 Contacts
- Plating:
 - U.S. - Clear CAD, Composite
 - France - Clear CAD, Composite, Gold (EU Space)



Integrated Backshell



RE-series Applications

- Base Station Harness
- European approved satellite connector
- Guidance systems UAV

Inline Sensor Connector



Inertial Measurement Unit



Serie 369[®]

Developed for commercial aerospace cabin systems

Qualification based on proven EN4165

AS39029 22- 20 AWG crimp contacts

Fully sealed to IP67

Colour coded keying

Security locking

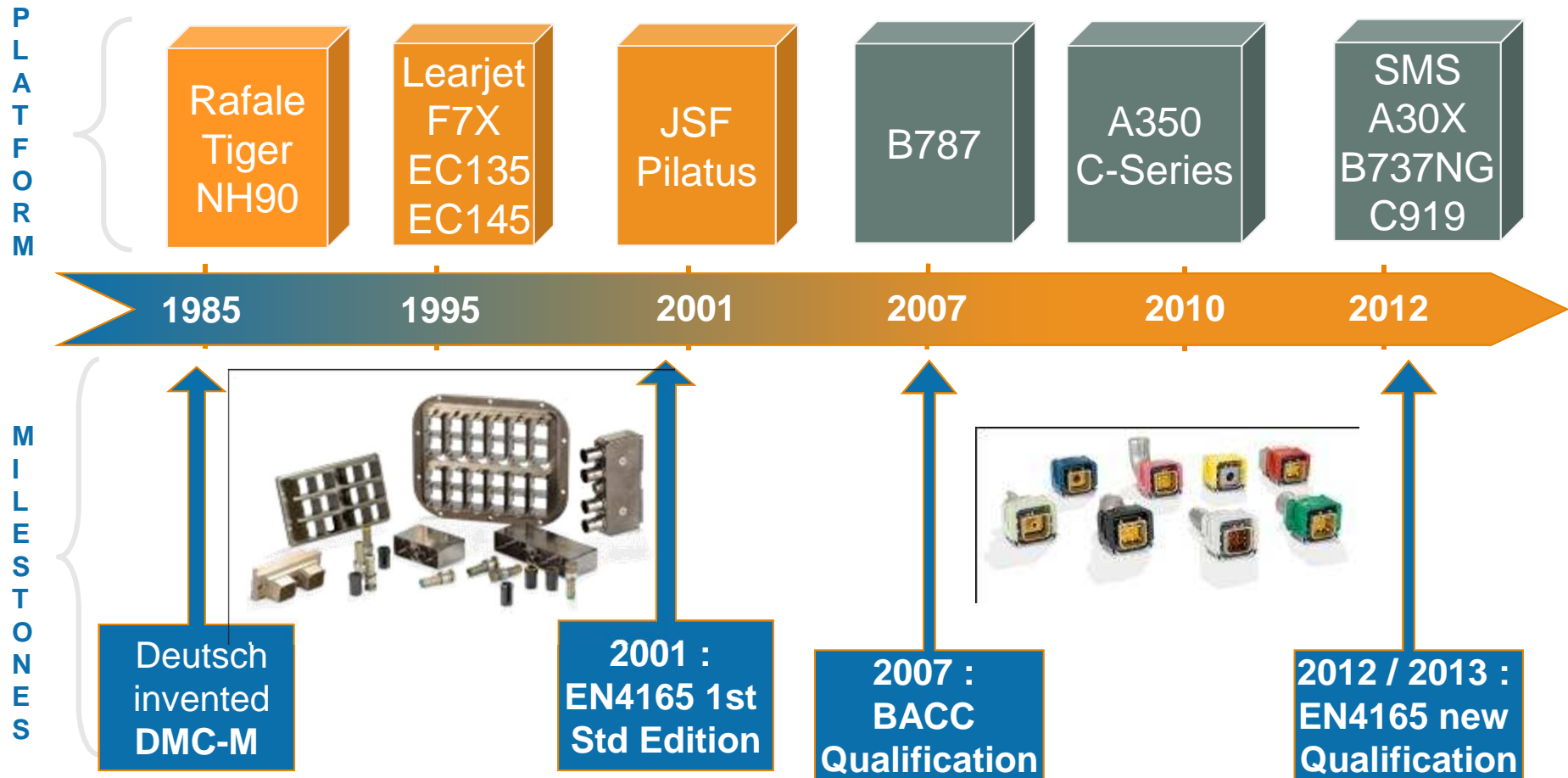


EN4165 – DMC-M

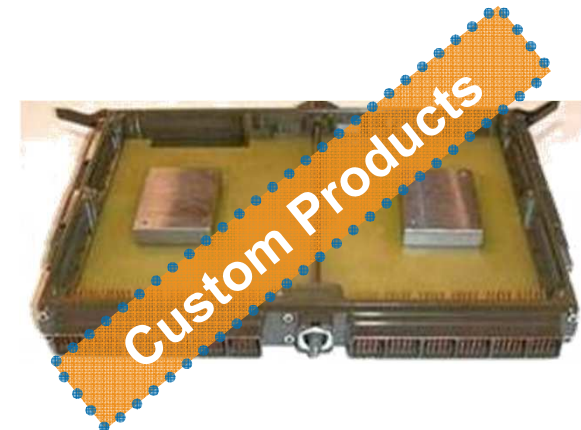
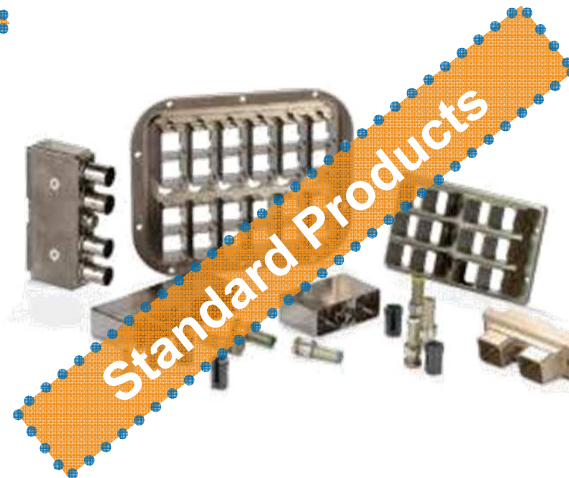
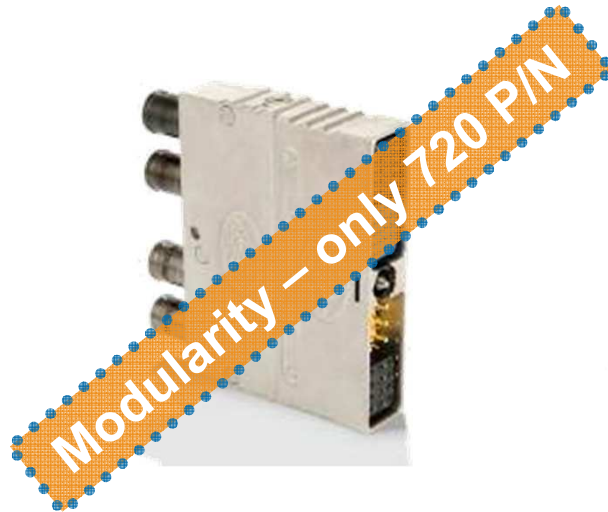
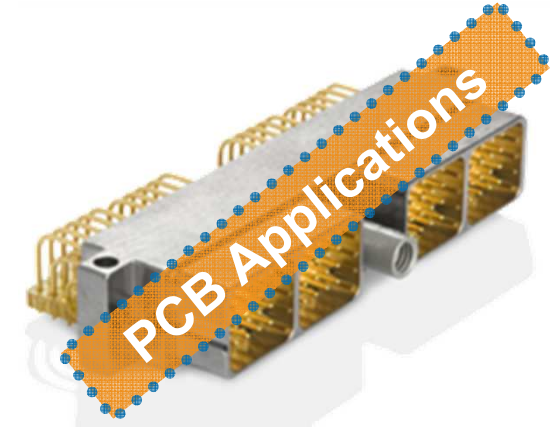


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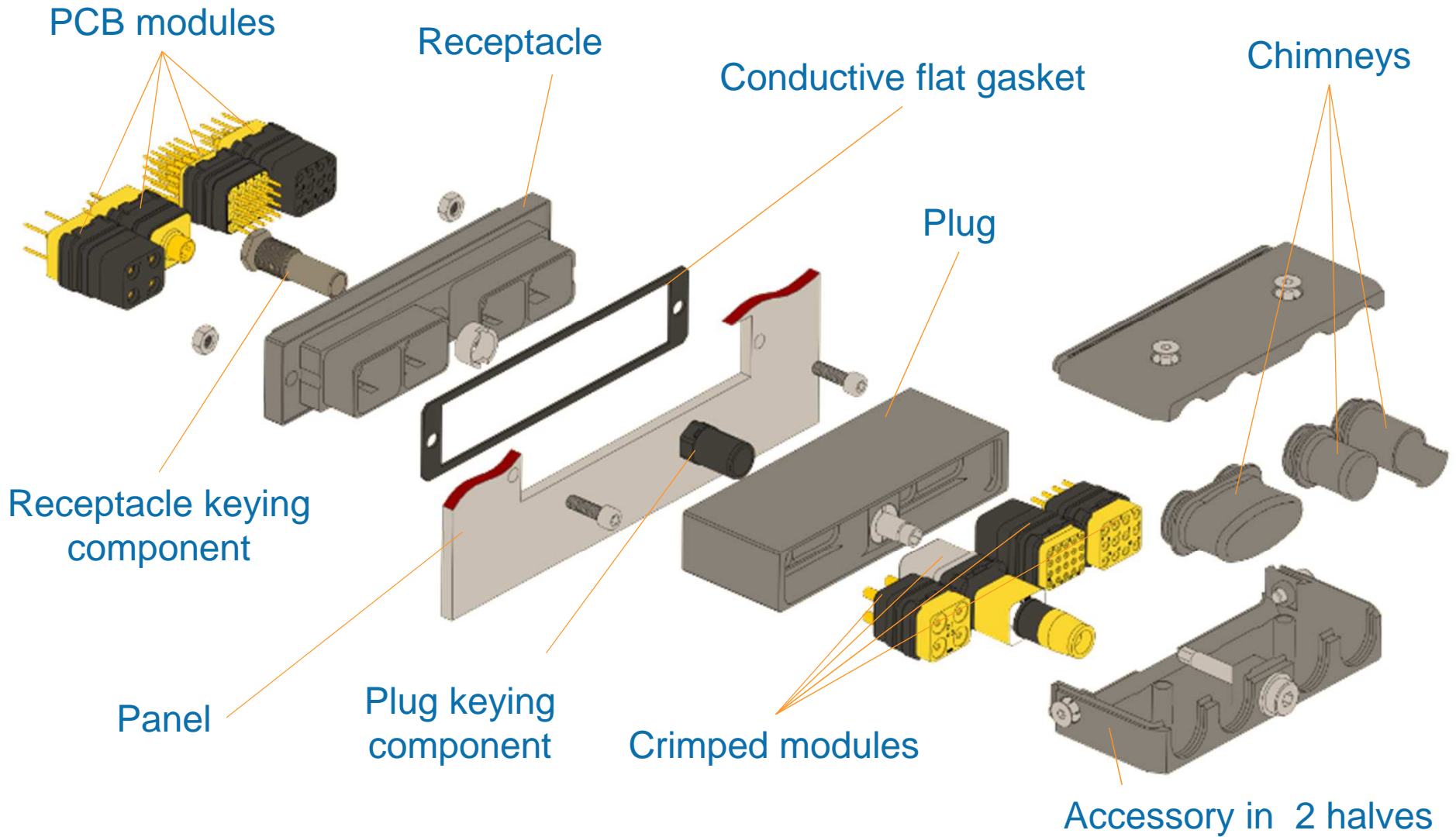
EN4165 – DMC-M / Chronology



EN4165 – DMC-M / Modularity



EN4165 – DMC-M / schematic



EN4165 - Single module

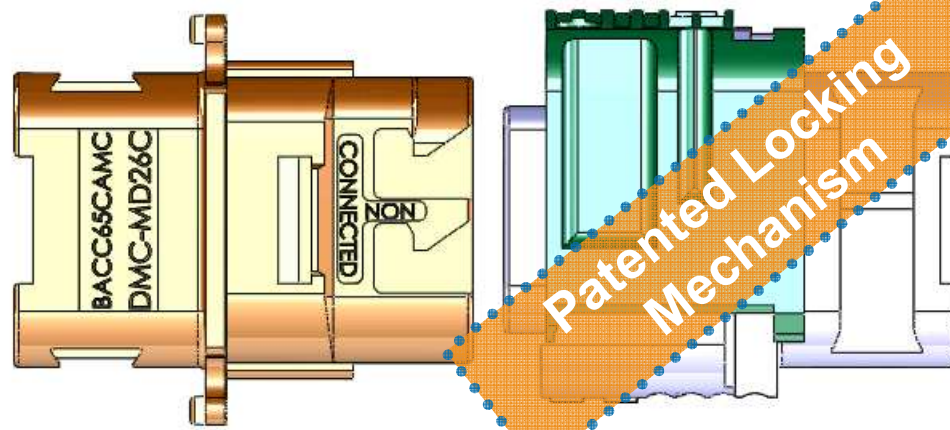
Composite “push-pull” latching

8 visual colors for keying

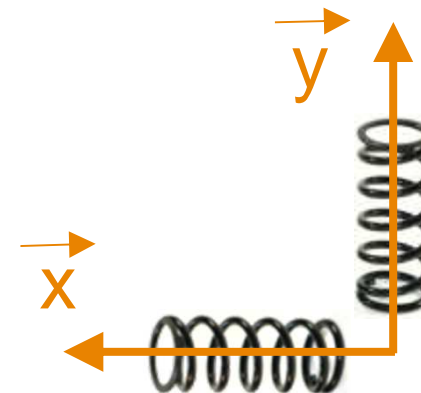
Complete Technology range



Locking mechanism



Double spring effect



EN4165 - Single module

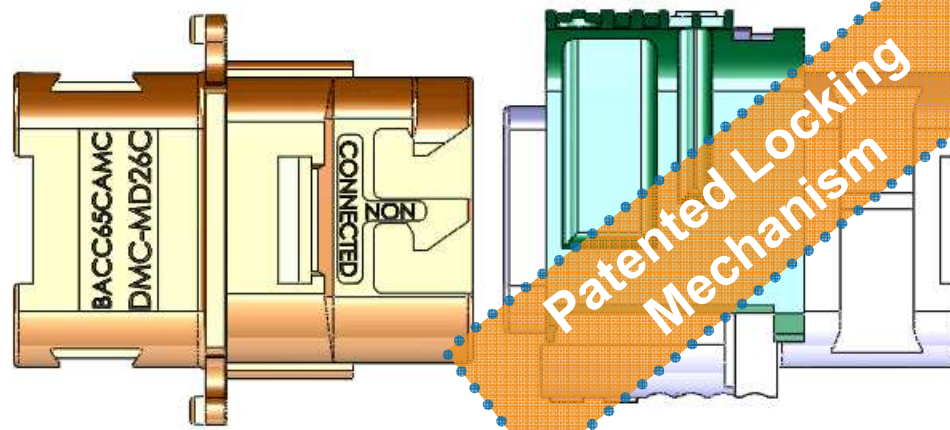
Composite “push-pull” latching

8 visual colors for keying

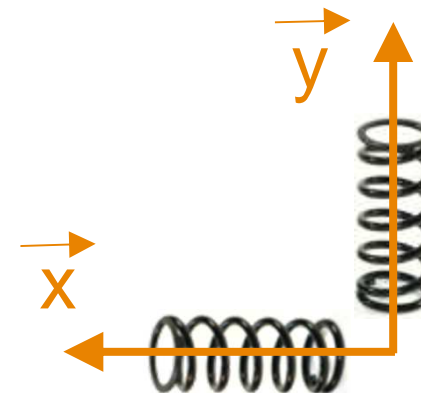
Complete Technology range



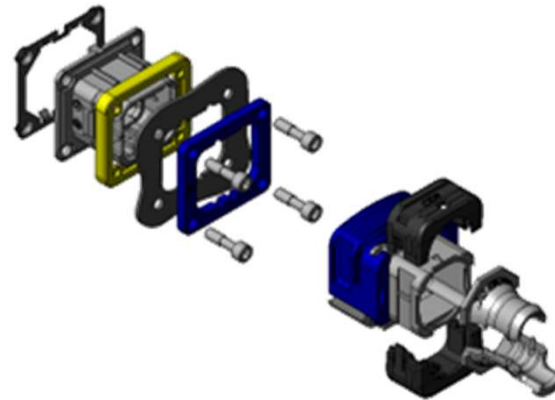
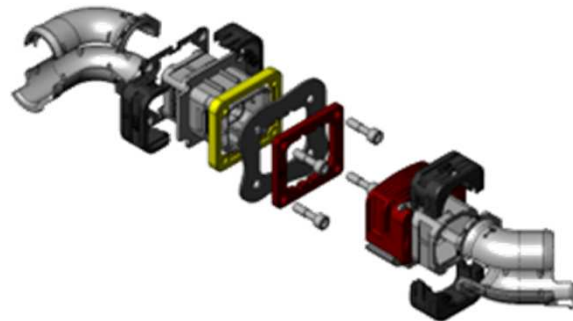
Locking mechanism



Double spring effect



EN4165 - Single Module / Cabin Standard



THALES SPB
IFE power Box



Panasonic SPM
IFE power Box



GENTEX
Dimmable Window
110 per A/C



BAE seats Controller
Up to 150 per A/C

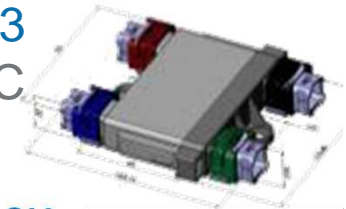
THALES SPB 2
600 per A/C



DEU & STA PSA
900 per A/C



D-Box Ex3
120 per A/C



MOR / SLA Box
225 per A/C



EN4165 / Applications

Civil Aerospace 45%



Equipment rack



Electrical power distribution



Feedthrough



Oxygen security equipment



Doors equipment

Military Aerospace 30%



Ejector seats



Weapons interface



Harnessing



Radars



Equipment interface

Specials 15%



Umbilical connectors



Rack & launchers

Military Vehicle 10%



Equipment interface



Harnessing

Panel Feedthrough / D-EASY

Before

Potting



- Non repairable
- 24h of preparation
- No flexibility
- Smoke and Toxicity

Proven
Technology at
Airbus and
other OEM

After



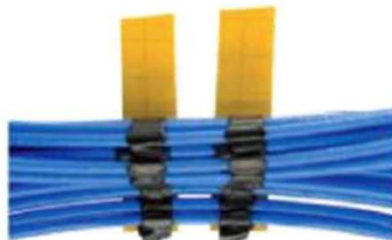
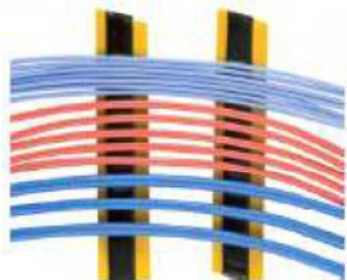
The D-EASY pressure seal

Quick Install
System for
Repair

- Installation time < 15 minutes
- Installation and repair possible on plane
- Flexibility to add cables
- Quality et reproducibility of sealing
- With or without accessories and shielding



Panel Feedthrough / D-EASY

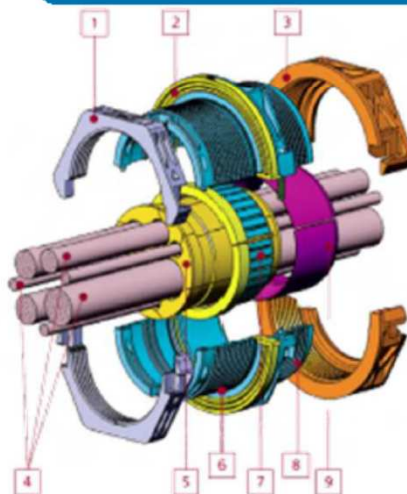


2 Halves shells

Over 25 Layouts developed

Easy Rework

Over 25 Layouts developed



Prepared bundle / Fabricous prepares		
Cavity marking	Ø max. inch	Ø max. mm
A	.25	6.35
K	.375	9.53
C	.5	12.70
D	.625	15.88
E	.75	19.05
F	.86	21.85

Connettori Motore



[Torna all'indice](#)

Engine Product Range

EN2997 Qualified

983



(EN 2997- ESC10 - BACC 63)

Integrated backshells

bonding area
for shrink boot



EN2997
(ESC15)

Crimping area
for shielding

100% Scoop-proof

984
(ESC11)



Fire Resistant (20mn)



DTS K (38999-K)

Engine Product Range / EN2997 #22

Because 50 to 80% of connectors on engines are sizes 8, 10 and 12, **3 new inserts with size 22 contacts have been developed by DEUTSCH - TE**

The aim is to increase the number of contacts without changing the shell size or to allow the decrease in shell size without changing the number of contacts

WEIGHT SAVING + SPACE SAVING

Service sheet(s) / Drawing series	Type document / Document Model	Reference document(s) / Document reference
QUALITY	QUALIFICATION TEST REPORT	PVE 697-226 VA Indice/Issue : 0 Date : November 29 th , 2011 Page : 1/67
Objet / Subject :		
<p>CONNECTORS EN 2997 CLASS K / KE / S / SE EQUIPPED WITH INSERTS FOR CONTACT SIZE 22 (layouts 08-06 / 10-12 / 12-21)</p> <p>ASD/CERT QUALIFICATION ACCORDING TO FprEN2997-001/2010</p>		
Auteur / Author : X. POTEL		Date creation : November 29 th , 2011

Approbations / Approvals (donner indice)

Fonction/Fonction	Nom/Name	Date	Visa
TEST LAB. MANAGER	Y. HARMIER	Nov 23 rd , 2011	
DEVELOPMENT	S. LE GOURRIER	Nov 23 rd , 2011	
DESIGN & ENGINEERING MANAGER	T. CASSAR	Nov 23 rd , 2011	
DESIGN QUALITY	C. LOBERT	29 th Nov 2011	
ASD-CERT Mandated Body	C. MAZELLE	29/11/2011	

Evolutions / Revisions

Indice / Issue	Nature des évolutions / Description of evolution	Page	Date	Auteur / Author
0	Creation of document	all	Nov. 29 th , 2011	X. POTEL

NEW

EN2997 Qualified

The Leap X Choice



Engine Product Range / Backshells

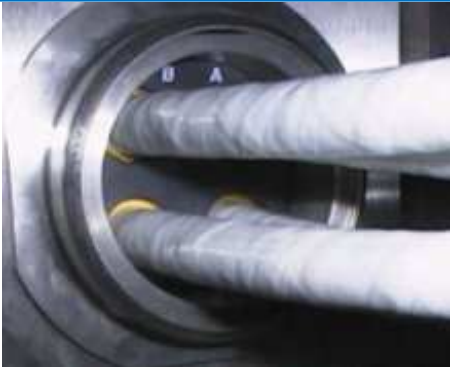
- **Custom Backshells** designed according to customer's specification
- Special coatings available to avoid cable chafing (**up to +350° C / 662° F**)



- **EN3660** elbowed or straight backshells with opened chamber designed for EN2997 connectors
- Elbowed or straight backshells for **MIL-DTL-38999** connectors with closed or opened chamber

Engine Product Range / Feedthroughs

Stainless Steel Version



Titanium Version

FIREWALL FEED-THROUGHS

- 260° C rated feed-throughs designed mainly for unique application for a unique customer.



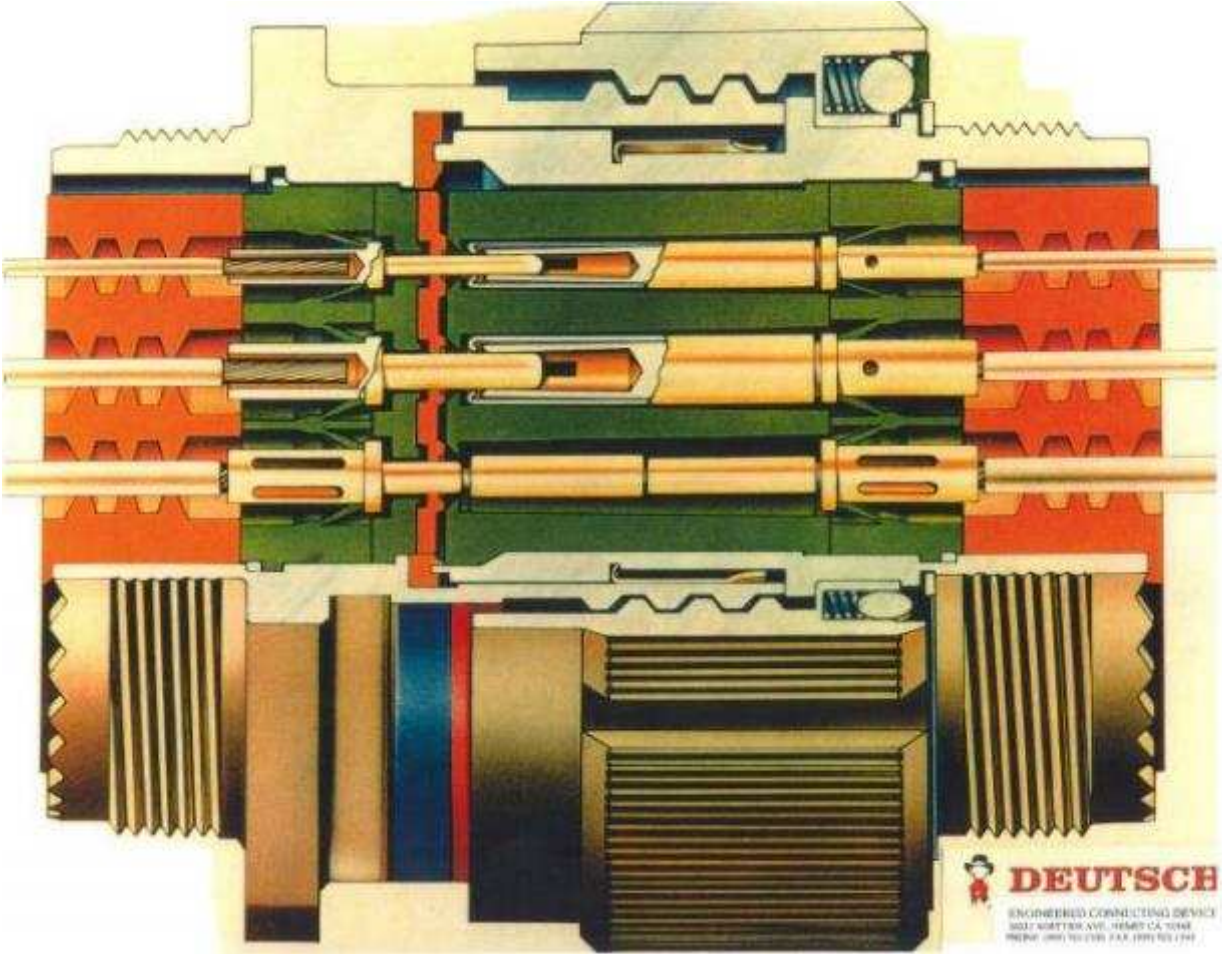
- Main characteristics :- Fire resistant (20 minutes)
 - 500 hours salt spray
 - High vibration (43.9 grms at ambient)
- Round stainless steel shells available, 3 diameters, passivated, at least 33 insert's planforms tooled
- Rectangular titanium shell, 1 insert's planform tooled

Contatti

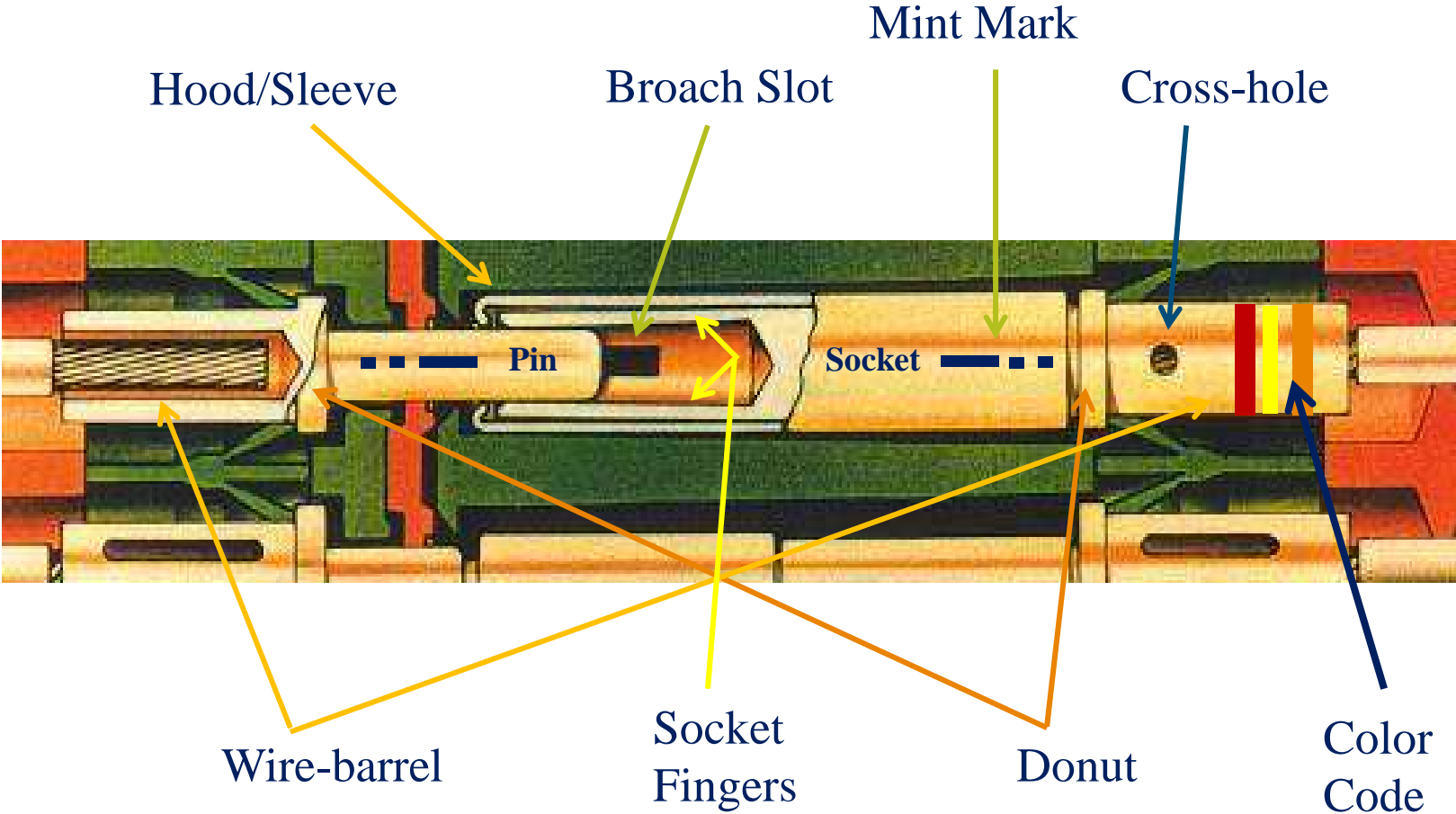


[Torna all'indice](#)

AS39029 – Solid crimp contact



AS39029 – Solid crimp contact



Contact Series AS39029

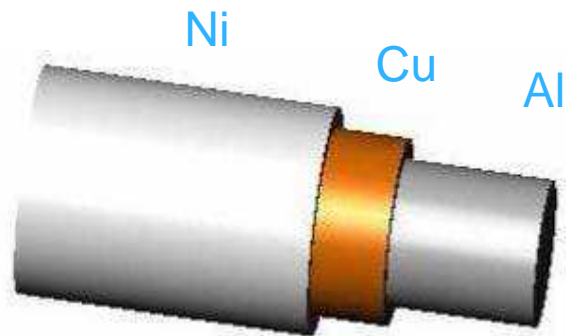
AS39029/**_***
Former M39029



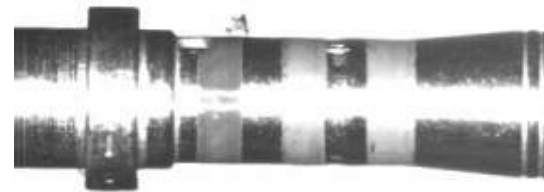
Notes:

- Contacts within series fit within the stack up of the insert pattern.
- All performance measurements completed at temperature.
- Current Rating
 - 22 Gauge 5.0 amps
 - 20 Gauge 7.5 amps
 - 16 Gauge 13.0 amps
 - 12 Gauge 23.0 amps
- Part numbering and Bin Coding are sequential and random.

Aluminum Cable Contacts



- Primarily used for weight savings
- Over 500lbs saved on A380.
- Simultaneous crimp.
- Gas tight crimp on wire and air tight crimp on insulation.
- Internal silver sleeve used in crimp barrel.
- Temperature 1000 hrs @ 175c
- Thermo cycle 500 cycles
- Salt Spray 500 hours.
- Sizes 22 ga. thru 12 ga.
- Currently over 100 variations.



Connettori Filtrati

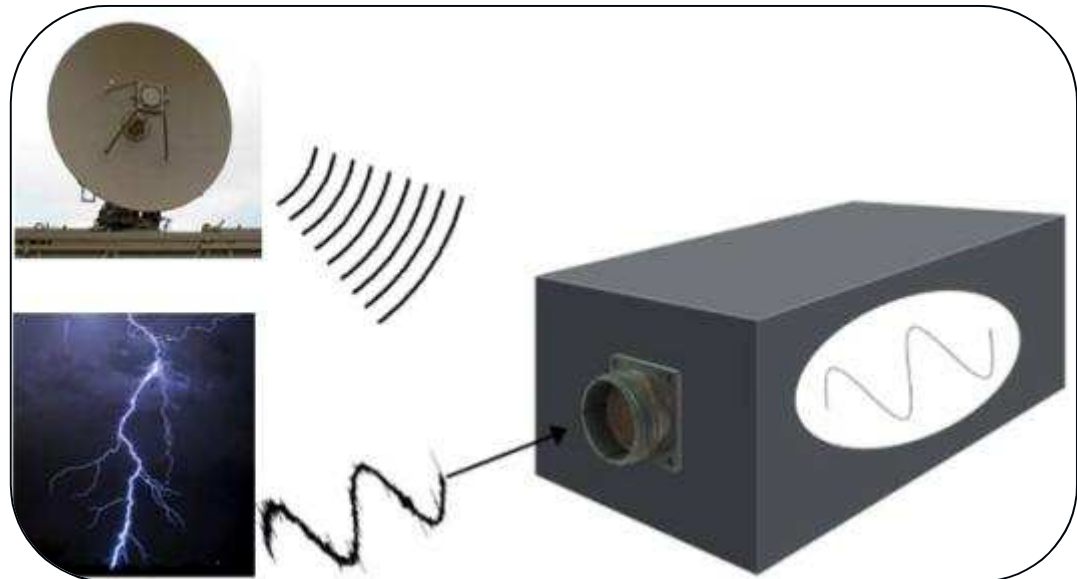


[Torna all'indice](#)

EMI Filtering

EMI Filtering effective against

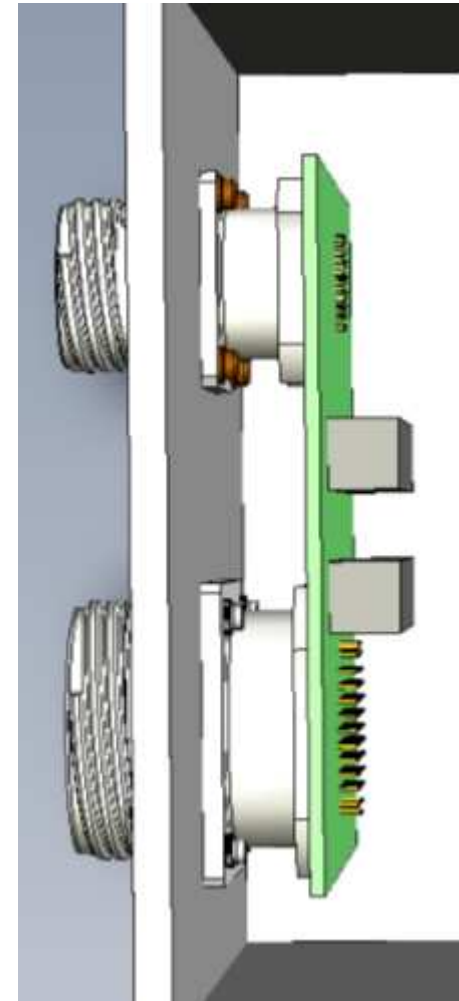
- Radiated
- Conducted
- Emissions
- Susceptibility



EMI Filtering

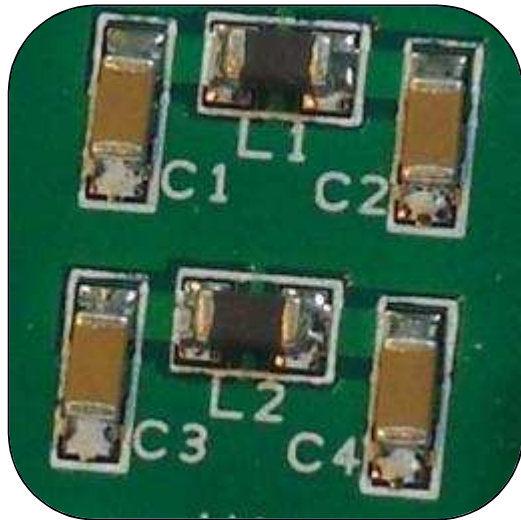
A Typical Filter connector offers many advantages

- High performance due to optimum location of the filter
- Multiple ground planes minimize RF windows
- Superior performance
- Reduced weight over conventional board filtering
- Ideally suited to mount directly to PCB
- Space saving
- Rugged
- Reduced user assembly time
- Total integrated filter solution
- Fully tested prior to installation



EMI Filtering

Deutsch can use:



**SMT Components
Inductors and Capacitors**

Cost effective on smaller
arrangements

Limited performance



**Planar Capacitor Arrays
with ferrite beads inductors**

Best performance

Integral screening

Cost and lead-time competitive

EMP filtering

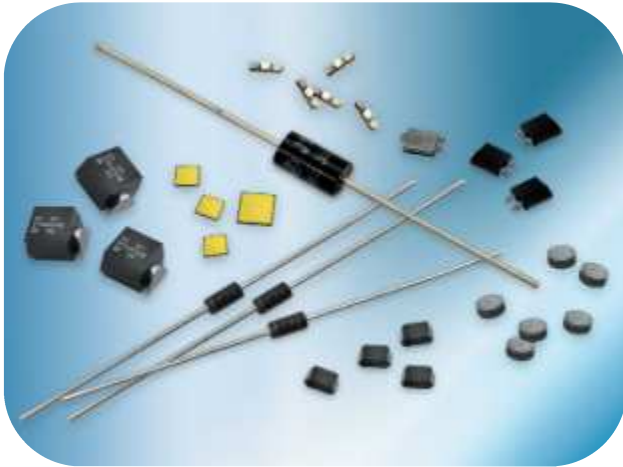
Protects against transient sources such as

- Electro Magnetic Pulse (EMP)
- Lightning (LEMP)
- Electrostatic Discharge (ESD)
- Nuclear Electromagnetic Pulse (NEMP)



EMP Filtering

Deutsch uses two types of technology:



TVS Diodes
Axial and SMT

Highest power devices

Components often COTS

Used with other components for EMI



Multi Layer Varistor Arrays

Negligible increase in connector size

Inherent capacitance for EMI

Limited energy handling

EvoMax™ MIL-DTL-38999 Series III

The standardised filter connector

- Faster quote, drawing, specification, leadtime
- Lower cost / No tooling
- Flexible filtering layout

Configuration sheet

- Select required options
- EMI and EMP options as flexible as ever



Product Configurator Sheet

Please use one sheet per connector. Mark your selection with an 'X', ensuring that at least one box is checked under each sub-category. Some configurations may not be available - Deutsch will advise by return should an option be selected which cannot be provided. Please fax the completed form to +44 (0) 1424 851726 or email to salesuk@deutsch.net

Your reference for this connector _____

Shell mounting style

Square flange with mounting slots
 Square flange with M3 cinch nuts
 Square flange with 4-40UNC cinch nuts
 Jam nut

Optional PCB mounting feature

None
 Additional rear flange with wash out slots and M3 helicoils
 Additional rear flange with wash out slots and 4-40UNC helicoils
 EvoPort™ ready - M3 helicoils
 EvoPort™ ready - 4-40UNC helicoils

Rear termination

2.5mm (0.098") PC tails
 3.18mm (0.125") PC tails
 5.08mm (0.197") PC tails
 3.20mm (0.126") Solder buckets
 EvoPort™ ready pins

Rear termination finish

Clean Tin Dipped (PC tails)

Shell material / finish

Aluminium alloy / cadmium with olive drab finish
 Aluminium alloy / electroless nickel
 Stainless steel / passivated
 Composite / cadmium with olive drab finish
 Composite / electroless nickel

Interface

Pins Sockets

Orientation / keyway

W S D A C E

Insert arrangement / platform

<input type="checkbox"/> 09-30 (3420)	<input type="checkbox"/> 17-26 (26420)
<input type="checkbox"/> 09-35 (5422)	<input type="checkbox"/> 17-35 (55422)
<input type="checkbox"/> 11-02 (2416)	<input type="checkbox"/> 19-11 (11916)
<input type="checkbox"/> 11-05 (5420)	<input type="checkbox"/> 19-32 (32920)
<input type="checkbox"/> 11-90 (6420)	<input type="checkbox"/> 19-35 (66422)
<input type="checkbox"/> 11-35 (11322)	<input type="checkbox"/> 21-16 (16416)
<input type="checkbox"/> 13-04 (4416)	<input type="checkbox"/> 21-41 (41420)
<input type="checkbox"/> 13-30 (10420)	<input type="checkbox"/> 21-35 (35422)
<input type="checkbox"/> 13-35 (22422)	<input type="checkbox"/> 23-21 (21416)
<input type="checkbox"/> 15-55 (5416)	<input type="checkbox"/> 23-55 (55420)
<input type="checkbox"/> 15-18 (15420)	<input type="checkbox"/> 23-35 (35422)
<input type="checkbox"/> 15-19 (19420)	<input type="checkbox"/> 25-04 (0416, 48420)
<input type="checkbox"/> 15-35 (37422)	<input type="checkbox"/> 25-29 (29416)
<input type="checkbox"/> 15-37 (4416, 8420)	<input type="checkbox"/> 25-61 (61420)
<input type="checkbox"/> 17-00 (0416)	<input type="checkbox"/> 25-35 (35422)

Maximum working voltage AC / DC

Tick all that apply

<input type="checkbox"/> 50VDC	<input type="checkbox"/> 50VAC
<input type="checkbox"/> 100VDC	<input type="checkbox"/> 100VAC
<input type="checkbox"/> 200VDC	<input type="checkbox"/> 200VAC
<input type="checkbox"/> 500VDC	<input type="checkbox"/> 500VAC
<input type="checkbox"/> 1000VDC	<input type="checkbox"/> 1000VAC
<input type="checkbox"/> Other (please specify)	

Dielectric withstand voltage

Tick all that apply

<input type="checkbox"/> 125VDC	<input type="checkbox"/> 125VAC
<input type="checkbox"/> 250VDC	<input type="checkbox"/> 250VAC
<input type="checkbox"/> 500VDC	<input type="checkbox"/> 500VAC
<input type="checkbox"/> 750VDC	<input type="checkbox"/> 750VAC
<input type="checkbox"/> 1000VDC	<input type="checkbox"/> 1000VAC
<input type="checkbox"/> 1500VDC	<input type="checkbox"/> 1500VAC
<input type="checkbox"/> Other (please specify)	

Filter topology (Specify transient protection on additional sheet)

Tick all that apply

If mixed filtering is required on the connector, please identify the requirements below, or on the next page.

<input type="checkbox"/> C	<input type="checkbox"/> LC
<input type="checkbox"/> CL	<input type="checkbox"/> PL

Filter value (total capacitance per contact)

Tick all that apply

If mixed filter values, grounded or feedthrough lines are required, please identify the requirements below, or on the next page.

<input type="checkbox"/> 0.5nF	<input type="checkbox"/> 10nF
<input type="checkbox"/> 1nF	<input type="checkbox"/> 20nF
<input type="checkbox"/> 2.5nF	<input type="checkbox"/> Grounded
<input type="checkbox"/> 5nF	<input type="checkbox"/> Feedthrough (unfiltered)
<input type="checkbox"/> 10nF	
<input type="checkbox"/> Other (please specify)	

Additional notes:

Deutsch will release this connector against the controlled documents listed below at the latest issue. Page 1 of 2

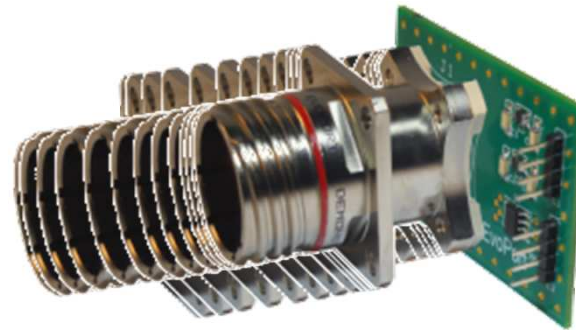
FOR DEUTSCH USE ONLY:	Document no. / Deutsch part no. _____	Issue _____	Date _____
@Deutsch	Deutsch DDP number _____	Issue _____	Date _____
	Deutsch envelope drawing _____	Issue _____	Date _____



EvoPort™

Low profile header provides PCB interconnect

- Solderless 'press fit' or soldered PCB Tail
- Filter connector becomes reusable
- Ease of assembly
- Overcomes mixed technology soldering issues
- Wash-out slots allowing cleaning & conformal coating.
- Fully sealed using conformal coating and 'O' ring.



Types of connector

Filter technology can be incorporated into a wide range of connectors:



38999 S1



38999 S2



38999 S3



38999 S4



JN1003



ESC/83723



26482



5015



EN4165 / ARINC 809



ASNE



ARINC 600

Custom solutions

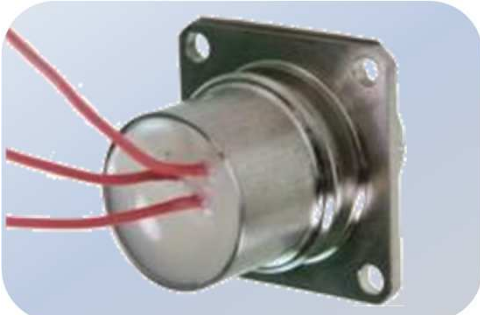
Problem solving solutions in partnership with customers



In-Line fuses



Rear keying and PCB mounts



Pigtail termination



Custom circuitry



Mixed contacts



High power TVS



Shorting plug + lanyard



High current

Connettori Ermetici



[Torna all'indice](#)

Hermetic Products – A History of Success

Overview

Hermetic connectors are used when temperature, pressure and environmental conditions exceed standard connectors.

Deutsch EIS has been manufacturing hermetic products since 1966.

Typical applications involving Aerospace, Military, Underwater, Industrial, and Space industries.



Hermetic Products – Applications

Market	Applications	Example Customer
Aircraft	Fuel tank	GOODRICH
Aerospace	Guidance system	BOEING
Space	Guidance system	RAYTHEON
Harsh Environment Precision Instruments	Sensors	METTLER-TOLEDO INC.
Automotive	Fuel tank	EATON
Law Enforcement	Video transmitters & receivers	SEMCO
Maritime	Radar system	NORTHROP GRUMMAN
Military	Guidance system	BAE SYSTEMS

GOODRICH

BOEING

Raytheon

METTLER TOLEDO

EATON

Powering the world's infrastructure

SEMCO

NORTHROP GRUMMAN

DEFINING THE FUTURE

BAE SYSTEMS

TE
connectivity

Hermetic Products



Benefits & Features

Used in extreme temperatures
-253 ° C (-423 ° F) to +200 C (392 ° F)

High pressure requirements up to 20,000
psi

Maintains an airtight seal under a vacuum
 1×10^{-8} atm cc/s at 15 psi

Fluid resistance per MIL-spec

Materials are corrosion resistant from all
environments as well as many destructive
chemicals

Hermetic Connectors – Resilient vs Hermetic

Resilient

Environment

- Atmospheric pressures
- Not airtight
- Limited temperature extremes
- Limited vibration

Standard Materials

- Shell: Aluminum, Composite
- Insert: Plastic
- Contacts: BeCu

Hermetic

Environment

- High pressure
- Continuously airtight
- Extreme temperatures
- High vibration

Standard Materials

- Shell: Stainless Steel
- Insert: Glass
- Contacts: 52 Alloy

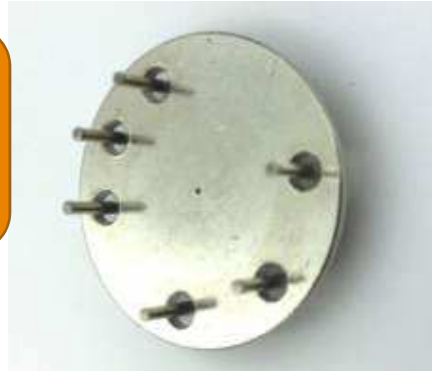


**Future
Shell: Aluminum**



Hermetic Products

Headers - Engineered to customer drawings from the simplest design to most complex project

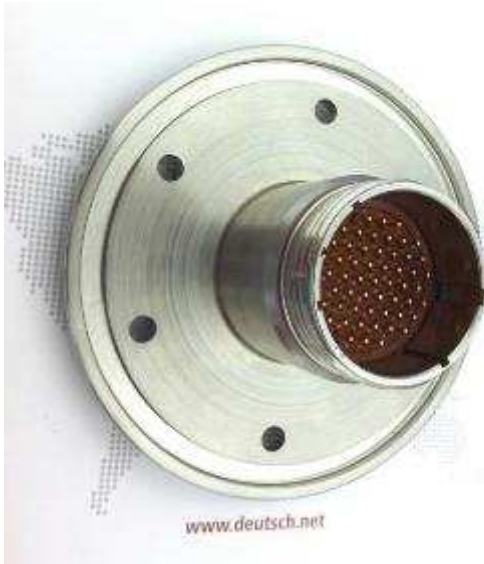


Design Goals

Solve every potential concern

Exceed customer expectations

Engineering and technical support through the life of the product



Connectors - Standard or custom designs for unique applications

Rear of connector:

- Straight pins (standard)
- Solder cups (standard)
- Solder tabs
- Eyelets
- Hooks
- Crimp socket contacts



Feedthroughs - Customer specified and tailor made to perform in the most demanding environments

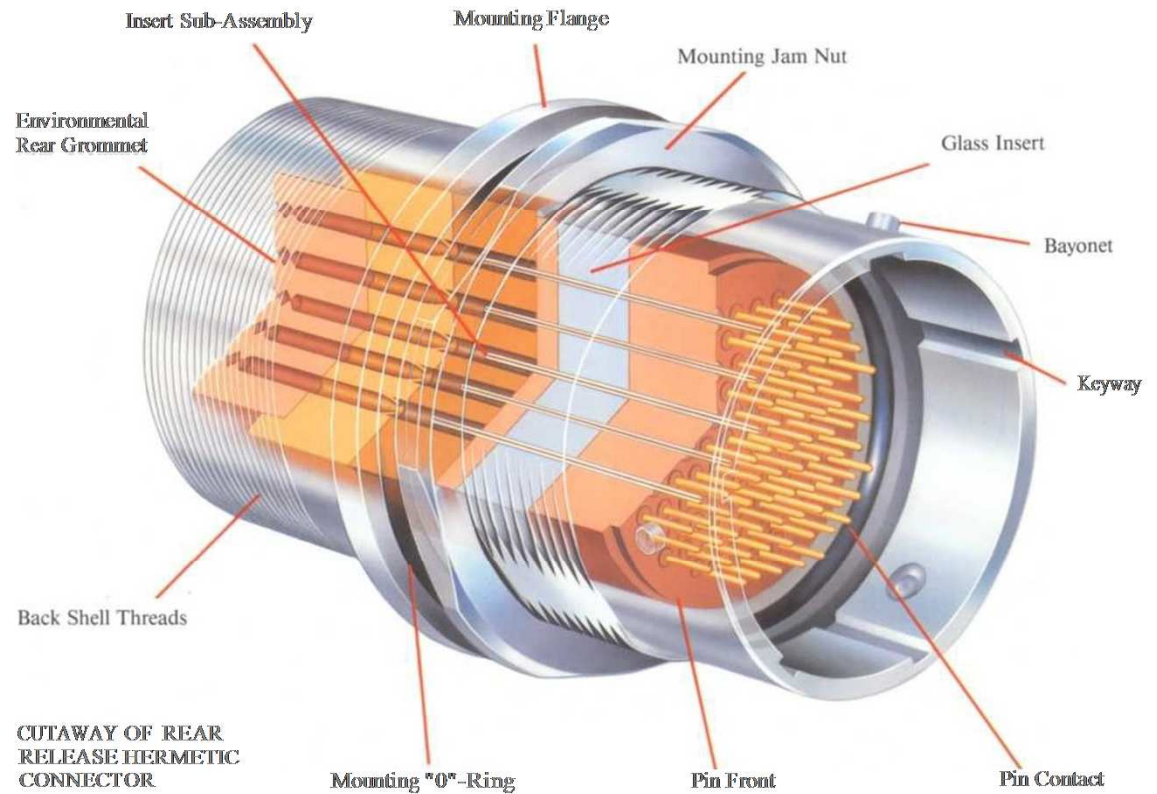
Hermetic Connectors – Components

Overview

TE-Deutsch has been manufacturing hermetic products since 1966.

Hermetic connectors exceed performance of standard connectors

- **Extreme Temperature**
 - - 253 ° C (-423° F)
 - + 200 ° C (+392 ° F)
- **Pressure**
 - 20,000 psi
- **Airtight / Vacuum**
 - 1x10-8 atm cc/s @ 15 psi
- **Environmental conditions**
 - Mil-spec fluid resistance
 - Corrosion resistant



Hermetic Products

In-House Capabilities

Machine shells and pins
CNC lathes

Manufacture glass preforms
2 glass presses and conveyor belt furnace to sinter the preforms

Glass firing
3 computer controlled conveyor belt production furnaces using specific atmospheres

Bond inserts and shell marking
Ovens
Laser and ink marking

Validation / Testing
2 leak test stations
100% DWV and IR testing
100% Helium Leak Testing



Hermetic Connectors – MIL-spec

Series	Mil Spec	Coupling Type
DBA50, DBC50	83723 Series I	Bayonet
DBA30, DBC30	83723 Series III	Threaded
AFD	26482 Series II	Bayonet
D815	81511	Bayonet
D817	81703	Push-Pull
DJT	38999 Series I	Bayonet
DJL	38999 Series II	Bayonet
DTS	38999 Series III	Threaded
DIV	38999 Series IV	Push-Pull
DSH	24308	N/A



Hermetic Connectors – Aerospace, Defense & Marine

Aerospace and Defense connectors

- EN2997
- EN3646
- EN3645



Marine connectors



901



941



DTB



9316



DCI



941



Feedthrough

DVH Comparison

Aluminium Hermetic

- Weight savings : up to 60 %
- Current increase : up to 250 A
- Pre-plated, copper-alloy contacts
- Less than ½ the contact resistance of Ni-Fe contacts
- Incorporates Matched CTE Seal



Connettori Spazio



[Torna all'indice](#)

Space Products

Additional Requirements

Single lot date codes and/or Material traceability

Outgassing/vacuum bake – material selection for TML, CVCM

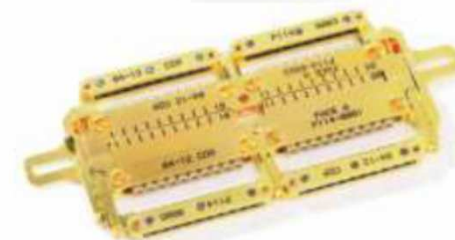
NASA, ESA, Customer specified testing

Screening Requirements

Magnetism, Magnetic Permeability



Circular	38999 series III 26482 81703
Rectangular	ABC RE Micro-D
Special	Cryogenic High power distribution Launcher Umbilical Solar



SPACE - DBAS

The Push-Pull Customer
Choice

Based on AS39029
contacts

Quick and Secure
coupling system

MIL-C-81703 series III
ESA/ESCC QPL

Push Pull, Lanyard, Umbilical
and rackable connector.



Connettori per la Marina



[Torna all'indice](#)

Connettori per la Marina

Depth	Connectors	Coupling	Material	Immersion	Standard
 - 5m - 20m - 1500m	DTB	Screw	Bronze	NA	MIL-DTL 38999 Serie III
	901	Screw	Aluminium / Stainless steel (if hermetic)	0,5 to 70 bars (if hermetic)	AGB/T 538
	941	Screw	Bronze / Stainless steel (if hermetic)	2 to 70 bars (if hermetic)	AGB/T 538
	DCI	Screw	Stainless steel	150 to 1000 bars (if hermetic)	Afnor PNX 41.002 Mil-C-26482-AIR 8463
	9316	Screw	Bronze / Stainless steel (if hermetic)	150 to 750 bars (if hermetic)	EN 50014



Connettori per la Marina

Depth

- 5m



DTB



901



941



Harness

- 20m

- 1500m



Prodotti su Fregate



DTB	
Standard	MIL-DTL 38999 Serie III
Use	Harsh environment
Material	Bronze
Coupling	Square thread with self locking
Modular	Signal, power, coaxial, optical
Advantage	Ruggedised, removable insert
Contacts	#22, 20, 16
Characteristics	Enviromental : 2 to 70 bars Service temperature : -65 to 175°C Intensity : 5 to 46A



Prodotti su Fregate



941	
Standard	AGB/T 538
Use	Decks and outside ships
Material	Enviromental receptacles : Bronze Hermetic receptacles : Stainless steel shell
Coupling	Square thread
Modular	Signal, power, coaxial, optical
Advantage	Ruggedised, removable insert
Contacts	#20, 16, 12, 8, 4, 0
Characteristics	Enviromental : 2 to 70 bars Service temperature : -40 to 100°C Intensity : 5 to 220A
901 Same as 941 exclude	
Use	Inside ships
Material	Enviromental receptacles : Tin plated aluminium Hermetic receptacles : Stainless steel shell
Characteristics	Enviromental : 0.5 to 70 bars Service temperature : -40 to 100°C Intensity : 5 to 220A

→ 901 and 941 are intermateable



Prodotti su Fregate



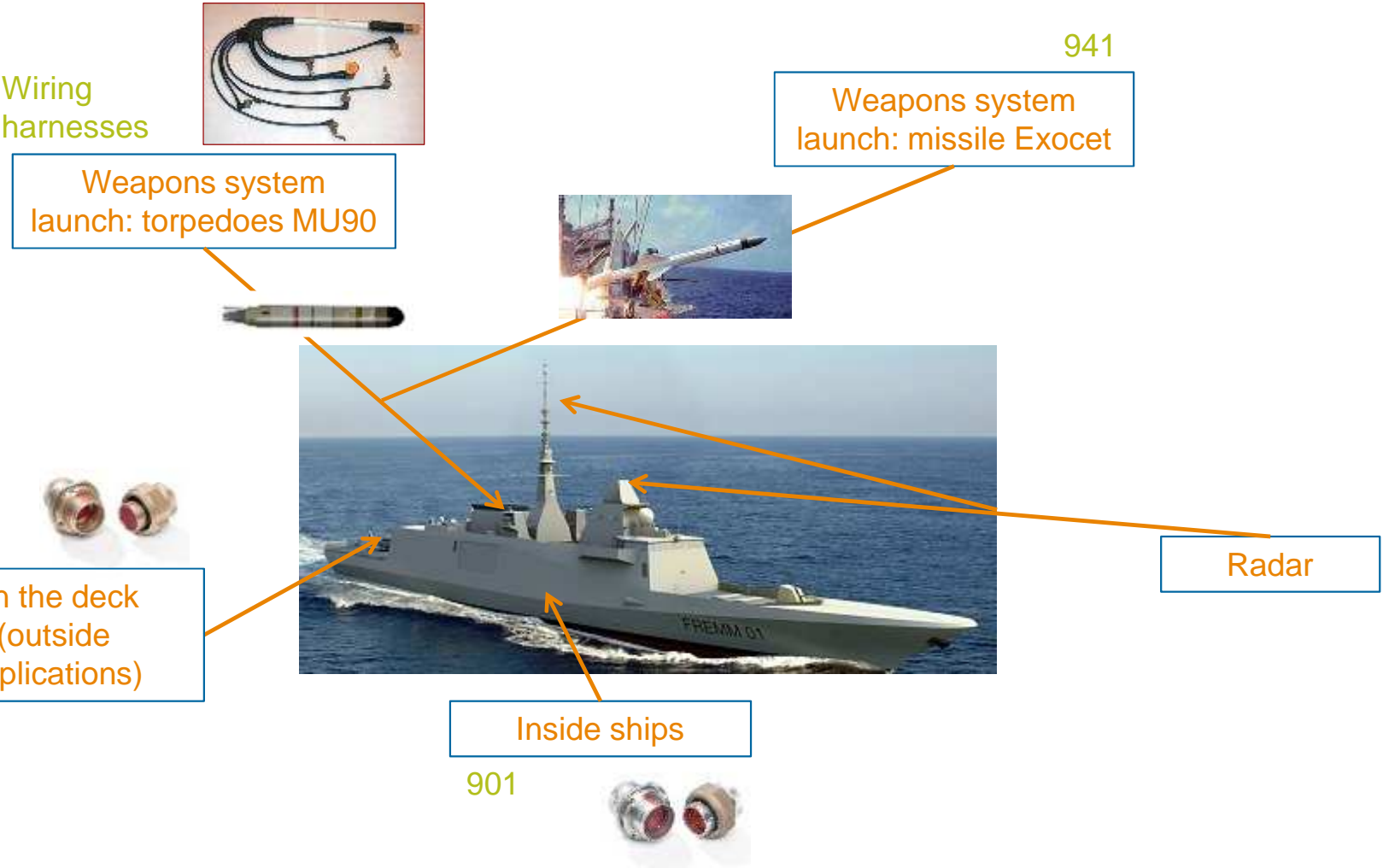
Overmolding	
Standard	Custom design
Use	Underwater / Decks / Outside ships
Material	Resin
Characteristics	Enviromental : 60 bars



Microwave harnesses	
Standard	Custom design
Use	Mobil power radars Resistance to rough environments (crush resistance, shock proof) Long flex-life
Material	DC to 26.5 GHz 300 to 2500 W / 5 GHz Environmental : 100 bars Service temperature : -65 to 165°C



Prodotti su Fregate



Prodotti su Sottomarini

Depth

- 5m

- 20m

- 1500m



941



DCI



9316



Feedthrough

Products on SUBMARINES



DCI	
Standard	Afnor PNX 41.002 Mil-C-26482-AIR 8463
Use	Underwater High pressure
Material	Enviromental receptacles : Stainless steel Hermetic receptacles : Stainless steel
Coupling	Thread
Modular	Signal, power, coaxial, optical
Advantage	Removable insert, hermetic feedthrough
Contacts	#20, 16, 12, 8
Characteristics	Enviromental : 150 to 1000 bars Service temperature : -55 to 100°C Intensity : 5 to 60A



Datasheet DCI

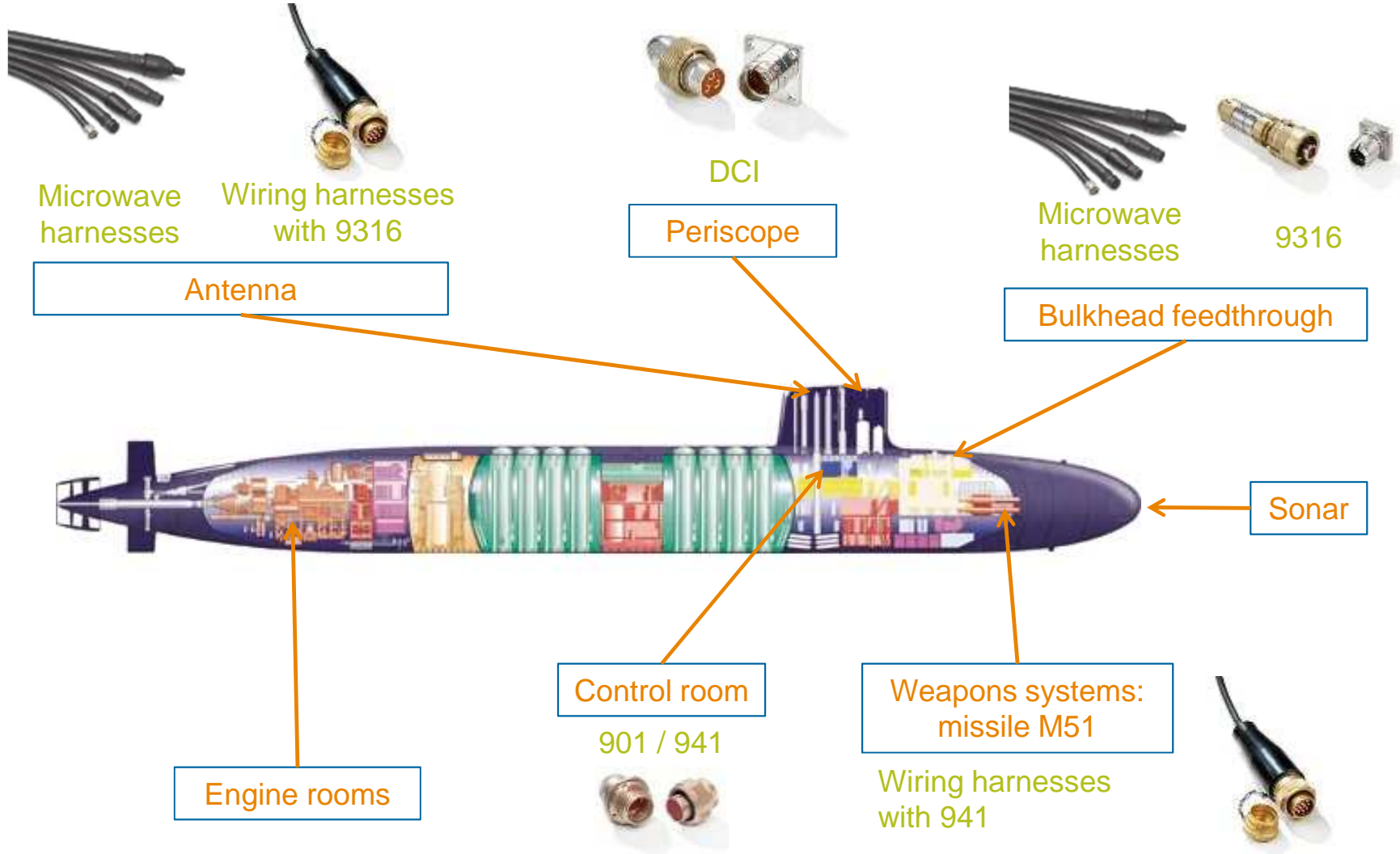
Products on SUBMARINES



9316	
Standard	Explosion-proof (EN 50014 and 50018) MIL-H 5606
Use	Underwater Explosive environments
Material	Enviromental receptacles : Bronze Hermetic receptacles : Stainless steel shell
Coupling	Thread
Modular	Signal, power, coaxial, optical
Advantage	Ruggedised, removable insert, hermetic feedthrough
Contacts	#20, 16, 12, 8, 4, 0
Characteristics	Enviromental : 150 bars Service temperature : -55 to 85°C Intensity : 5 to 600A



Prodotti su Sottomarini



Connettori Fibra Ottica

[Torna all'indice](#)

Fibre Optic Facilities and Capability at Hastings UK

Design

- In-house design of contacts, connectors & harnesses
- 3D Modelling (SolidWorks)

Manufacturing

- Optical connector, termini and cable harness production to the highest quality standards
- In-house manufacture and plating of contacts & connectors

Test & Qualification

- Extensive Test Laboratory facilities & Fibre Optic assembly test equipment including live multichannel optical testing for IL, RL, Discontinuity.

Support and Training

- Termination tools, kits, and training



Fibre Optic Products

Single Channel



Multi Channel



Exp. beam



Cable Harness



RSC (JN1148) Singleway Connector

- Butt joint sprung termini
- Single and multimode
- Corrosion resistant ARCAP
- Easy to clean & maintain
- Airbus qualified - ABS0929
- RSCV tunable version
- Eurofighter - Laser Warning System
- Boeing 757 In-Flight, In-Service Programme
- Remote Operated Vehicles
- Nimrod MR4-A
- Fibre Optic Towed Decoys (IDECM)
- Airbus Standard Fibre Optic Connector, TACS, IFE
- MOD Naval Fibre Networks
- Airborne Laser (USAF)
- Formula 1
- RSC Slip Ring development



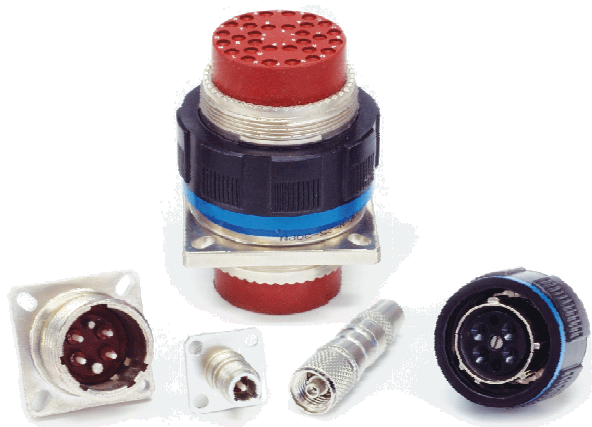
MC3 (JN1146) Multiway Connector

- Butt joint sprung termini
- Single and multimode
- Based on D38999 SIII
- Dowel pin alignment
- Removable front socket insert
- 5, 8, 12 channels
- Lanyard & POF versions
- Boeing In-Flight In-Service (Commercial)
- Boeing AWACS, USA and NATO
- BAE Eurofighter, Laser Warning System
- Fibre Optic Antenna Link (FOAL), US Navy
- Boeing Space Shuttle (IVHM)
- Fibre Optic Towed Decoys (IDECM) B1-B, F-15, F-16, FA-18, Tornado
- Phalanx Close In Weapon System (US Navy) / Sea RAM variant



MC5 (JN1130) Multiway Connector

- Based on D38999 SIII
- Composite shell (multiway only)
- High density 1.25mm termini
- Same enhancements as MC3
- 1, 2, 4, 6, 8, 10, 18 and 30 ways
- 1500+ matings
- Eurofighter Defensive Aid Sub System (DASS)
- EFA Computer Bus
- In Flight Entertainment (IFE) Data Loaders
- Airborne Laser, YAL 1A (USAF)
- Ground Radar Communications (DRDO/CoreEL)
- Shipboard weapons firing systems
- Maritime Patrol Aircraft (P-1)



MIL-T-29504

- 38999 SIII cavity size 16
- Mix and match electrical / optical
- Meet the requirements of MIL-T-29504/4 and 5
- Legacy standard aerospace environments
- Single and Multimode
- Not easy to maintain
- QPL to help market penetration



MC6 Multiway Ribbon Fibre Connector

- D38999 SIII #11 Composite Shell
- MT Ferrule, singlemode, multimode plus APC
- 12 channels per connector (up to 72 potential)
- Flat ribbon and multichannel circular cable
- Falcon 7X
- Future potential of Falcon 900 and Falcon SMS
- Military Ground Vehicle Systems



DMC-M (EN 4165, ARINC 809, BACC65)

Type 47 Hybrid

- Size 16 and size 22 MIL standard copper contacts
- ARINC 801 optical termini



MC5 (JN1130 Termini)

- Qualified JN1130 1.25mm termini
- Alignment dowels
- Removable socket face



MC6 Multi Channel

- MT Ferrule
- 12 & 24 channels
- Potential to 72 channels



Expanded Beam Range (Illustris™)

RSC Illustris

- Same housing as the standard RSC
- Enhanced anti-vibration coupling
- Simple LC termination

TMC Illustris

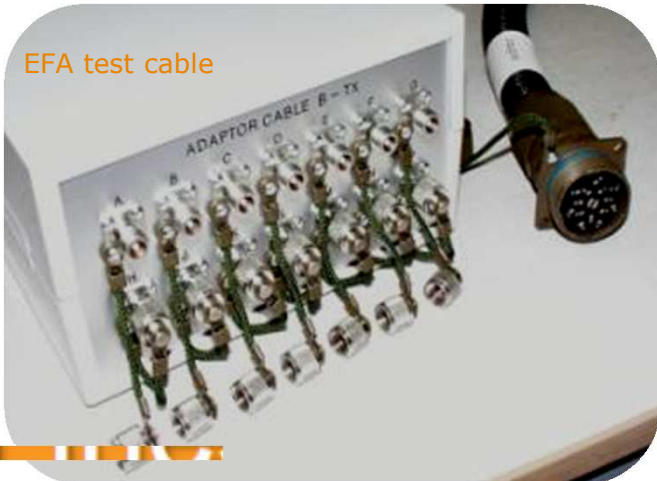
- MIL-DTL-83526 compatible
- High performance, very low loss
- Simple LC termination

Illustris D-Sub & 29504

- Size 16 and 12 for 29504
- DIN41612 for D-Sub



Harness/Cable assemblies



Grazie

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