

# 高信頼性マイクロコネクタ

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代理店

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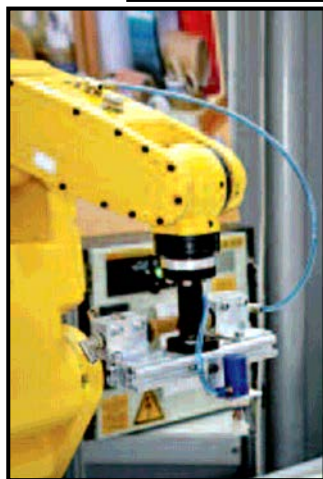
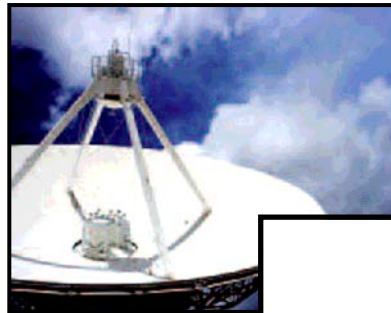
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Sept 2008

# CMM マイクロコネクタ



# INTRODUCTION

## CMMマイクロコネクタのキーポイント：

- 小型 & 軽量
- 過酷な環境下で使用に耐える
- 基板—基板、基板—ケーブル、ケーブル—ケーブル接続用
- 高周波ピン+大電流ピン+信号ピンの自由な組み合わせ

# ニコマチック社プレゼンテーション



**NICOMATIC**

CD-rumまたは  
YouTube でビデオを



- ジュネーブ近郊のフランス企業 (5 Km)
- フランス証券取引所 EuroNext に1997年から上場
- 従業員150人、アメリカ・中国・ブラジルに子会社
- 15の代理店、日本ではクロニクス(株)
- 売上高1540万ユーロ、80%輸出 (40ヶ国と取引)
- 4分野の製品群 (コネクタおよびスイッチテクノロジー)
- 革新的精神 (国際特許および商標)
- CMMマイクロコネクタ = 最も成長性の高い分野(4製品群のうち)
- すきま市場を狙う強い方向性
- ISO 9001:2000認定 およびEN 9100
- RoHS準拠製品 2005年1月1日より
- 社内デザインおよび製造により安定した納期



# 総目次

チャプター 1 : CMMコネクタとは

チャプター 2 : CMMの利点

チャプター 3 : CMMシリーズ およびアクセサリ

チャプター 4 : CMMの用途



# チャプター 1

## CMMコネクタとは？



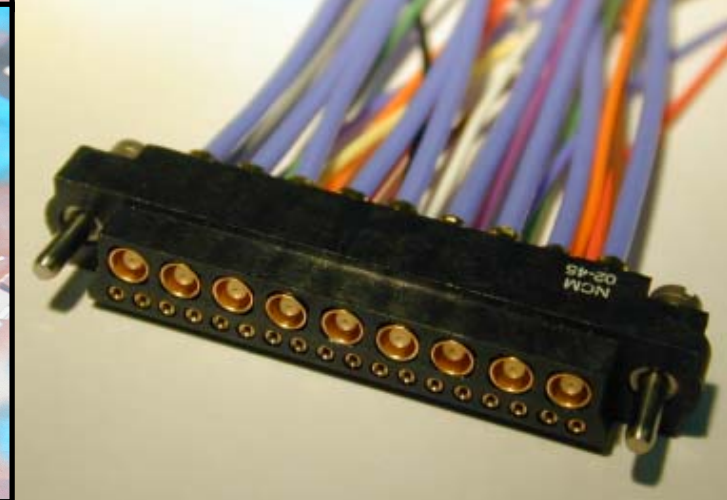
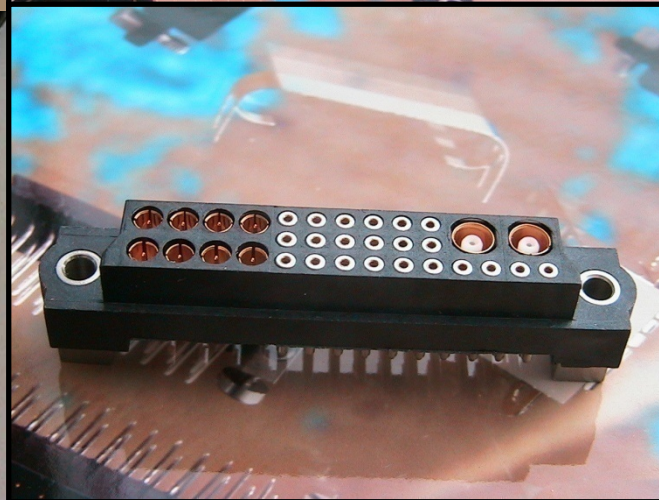
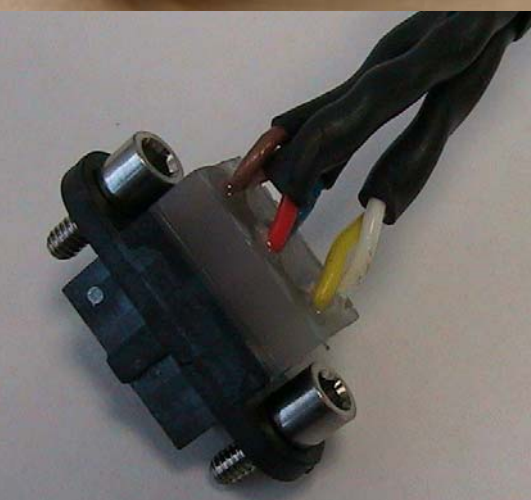
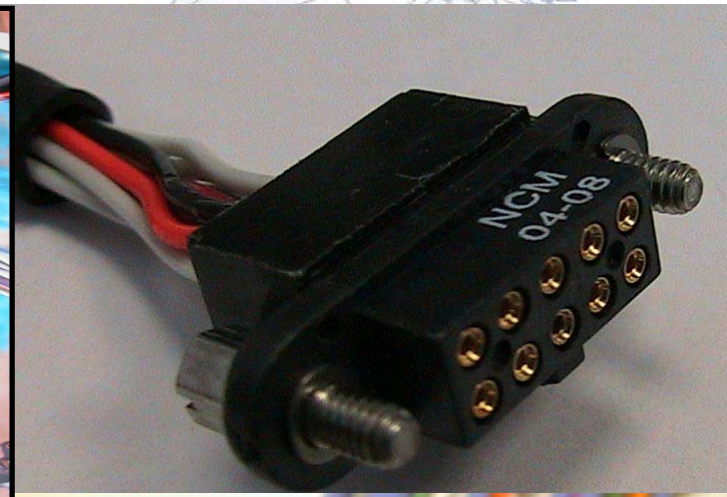
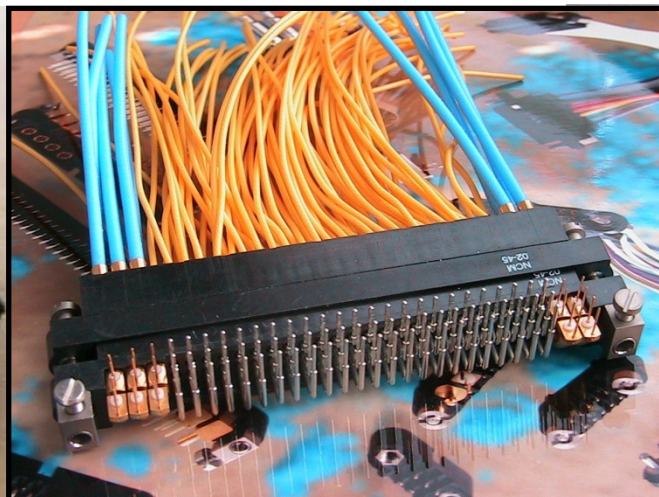
# CMMコネクタとは？

**CMM = « Connecteur Milli-Métrique » (仏)**  
**= Micro-Millimetric Connector**

- 2mmピッチコネクタ
- 高性能固定具付きミックスレイアウトコネクタのパイオニア
- MIL-C-55302 & BS-9525-F0033基準により過酷な条件下での高信頼性を獲得
- すべてのラインナップがスタンダード品

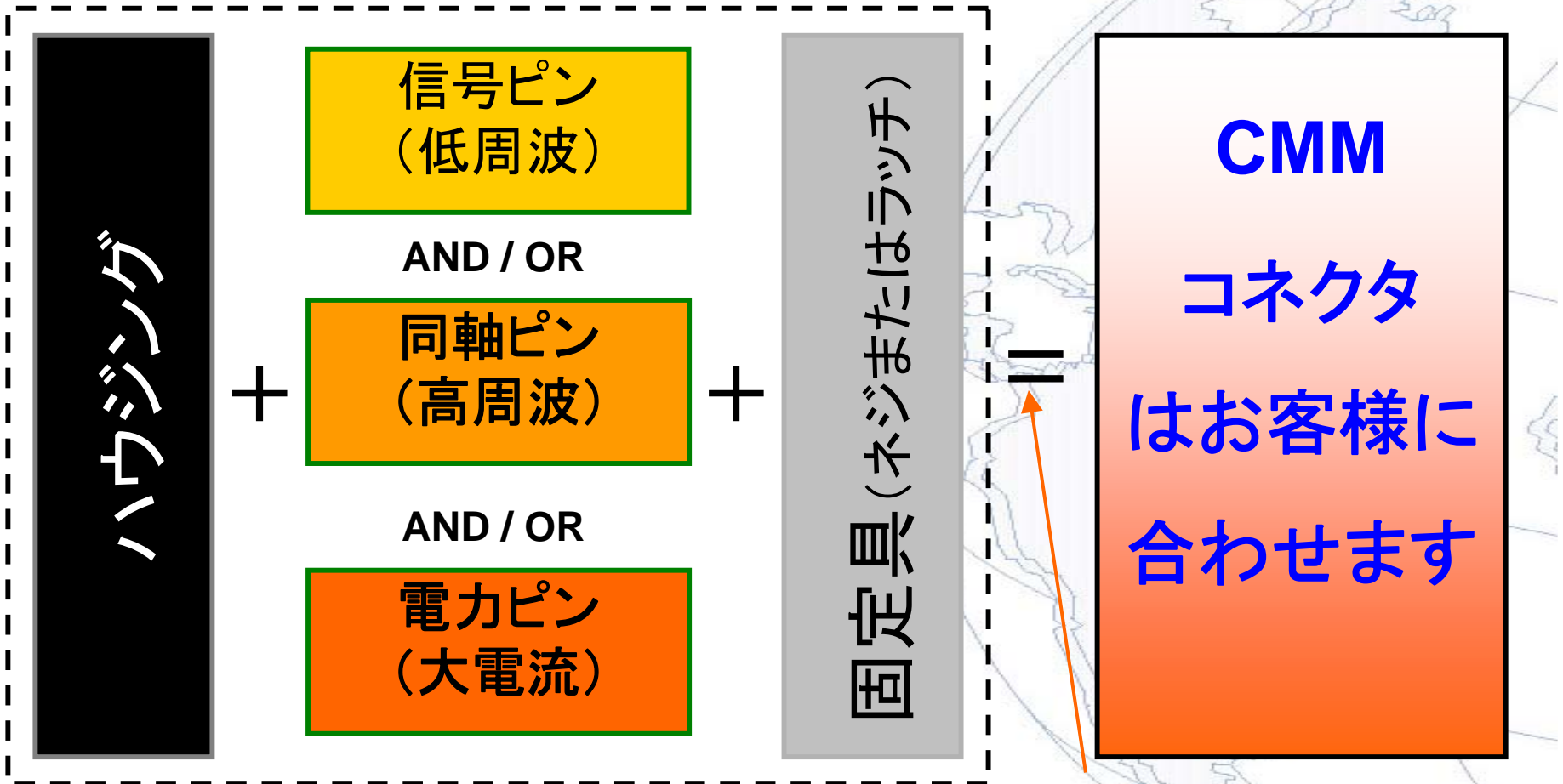


# CMMコネクタの一例





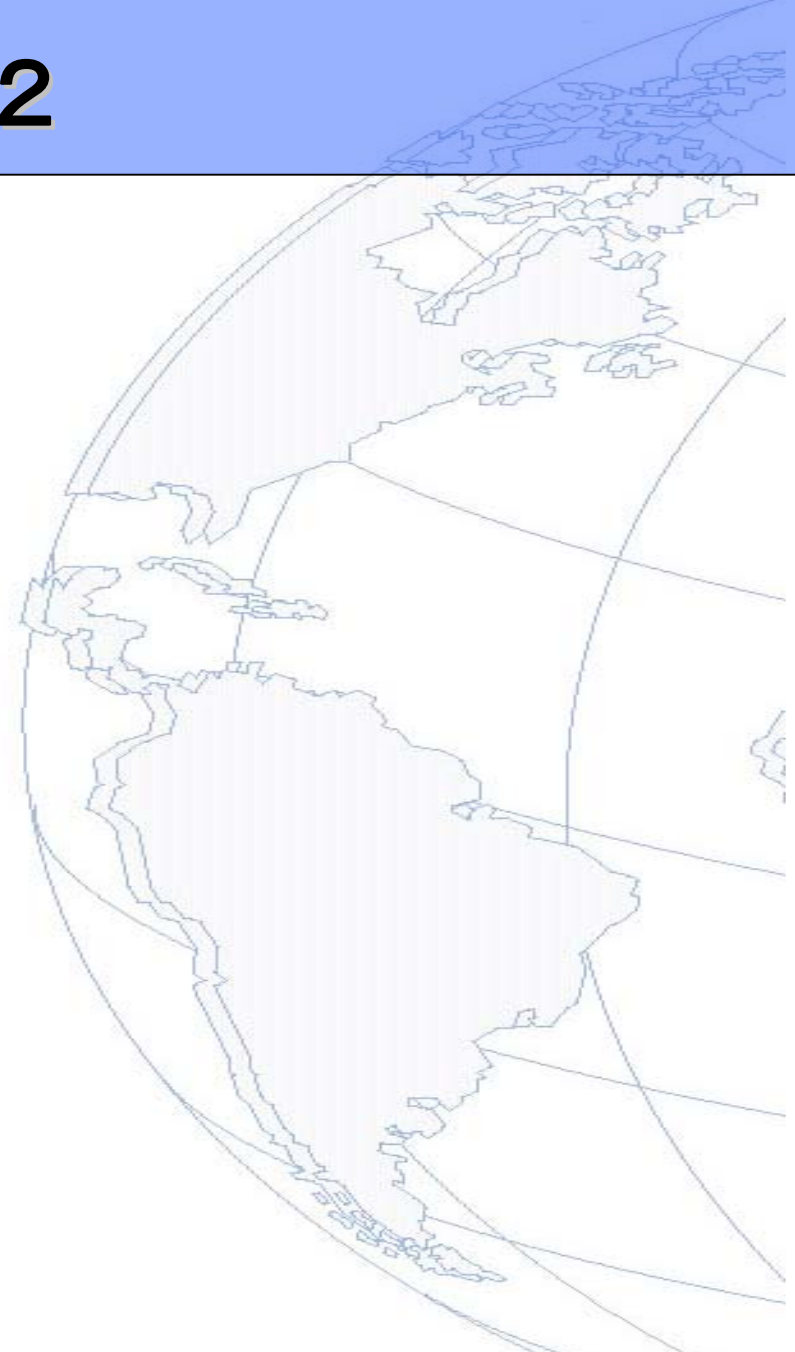
# CMMコネクタの構成



つまり『レゴ™』ブロックのような構成のコネクタです

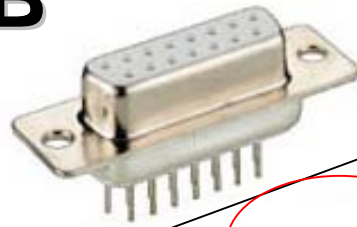
# CHAPTER 2

## CMMの利点



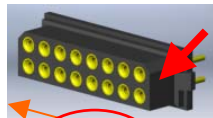
# D-SUBコネクタと比較

**D-SUB**  
(15ピン)



39.2 mm

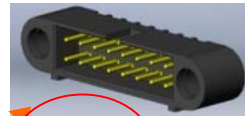
ラッチ付き



19 mm

**CMM**

固定用ネジ付き



26 mm

**-40%**  
ESPACIO TOTAL

**とても重要です**



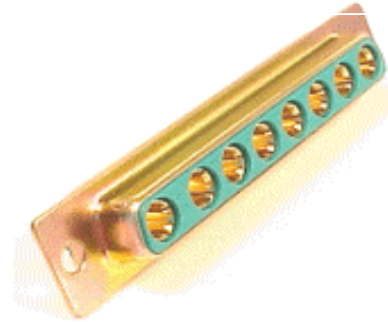
# CMMを使う場面

よくある  
事例

信号ピン



大電流ピン



+

お好みで2種類または3種類の異なるピンを1つのハウジングに！



or

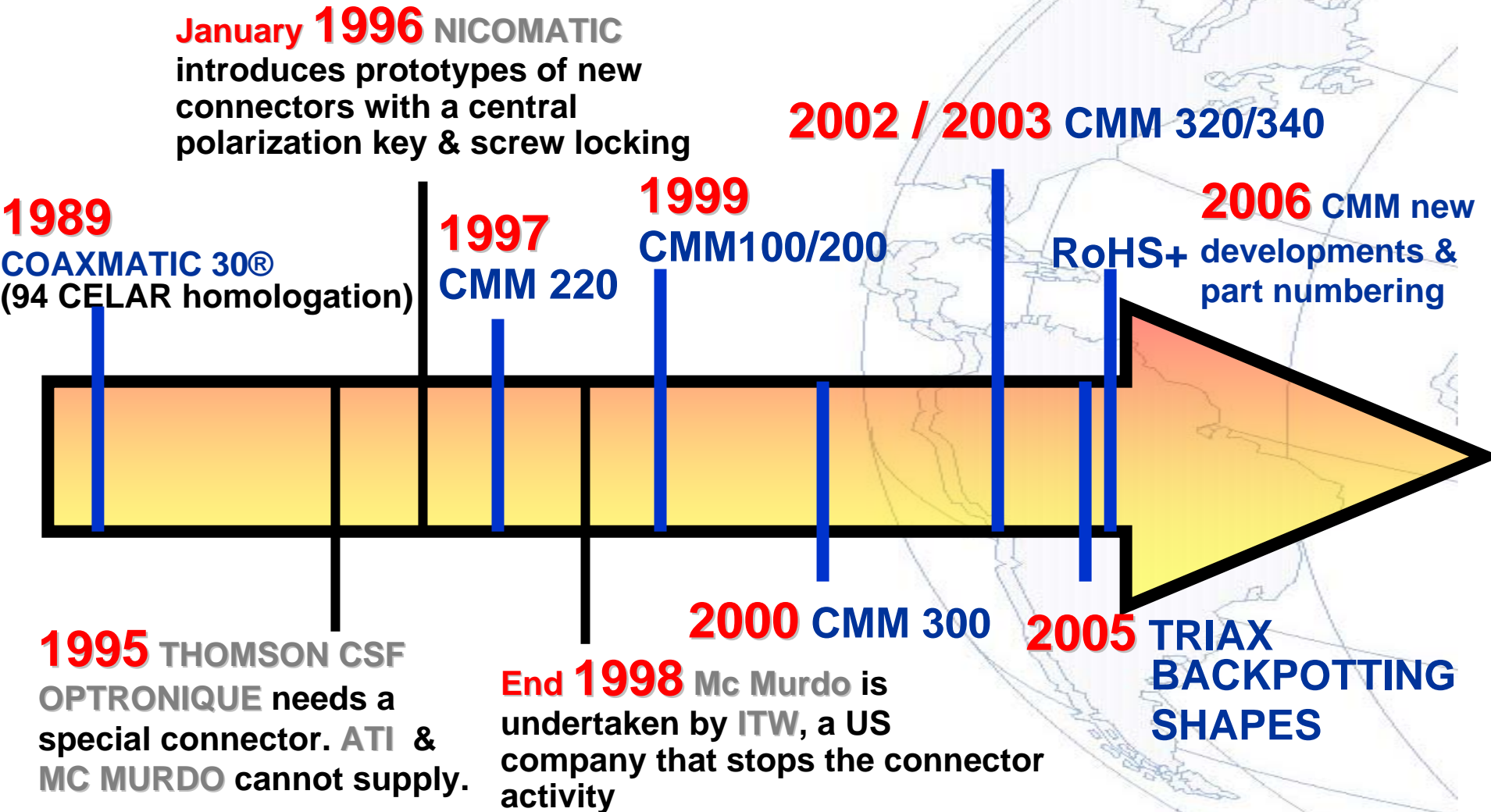


ニコマチックの  
スタンダード  
ソリューションです

# 注目すべき利点

- ❖ マイクロコネクタの無限の組み合わせ
- ❖ アプリケーションの貴重なスペースを確保
- ❖ 優れた機械的および環境的特性
- ❖ 強振動にも耐える緩み防止固定機構付き
- ❖ 耐溶解性、耐放射性、オキシジェンフリー
- ❖ RoHS & ウィスカフリー (すべてのピンは金メッキです)
- ❖ 100%品質管理 & フルトレーサビリティ

# CMMコネクタ 経緯





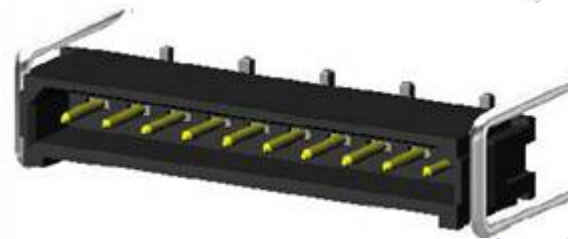
# CHAPTER 3

## CMMシリーズおよびアクセサリ

# CMM 100 / 200 シリーズ

## CMM 100:

1列ピン配置 ; 2-25ピン LFコンタクト(信号ピン) ;  
固定具あり/なし



Low Frequency

## CMM 200:

2列ピン配置 ; 4-50ピン LFコンタクト(信号ピン) ;  
固定具あり/なし

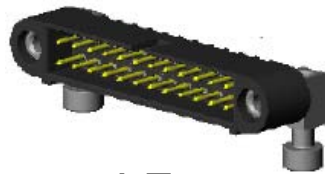


Low Frequency

# CMM 220 シリーズ

## CMM 220:

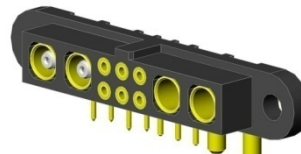
2列ピン配置 ; 4-60ピン LFコンタクト(信号ピン) ; 最大15ピン HF/HPコンタクト(高周波/大電力ピン) ;  
複数固定具 ; 誤挿入防止機構



LF



HF/LF



HF/LF/HP



HP/LF/HP



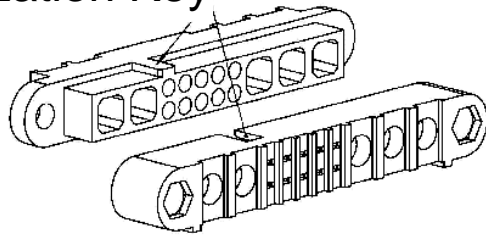
HF



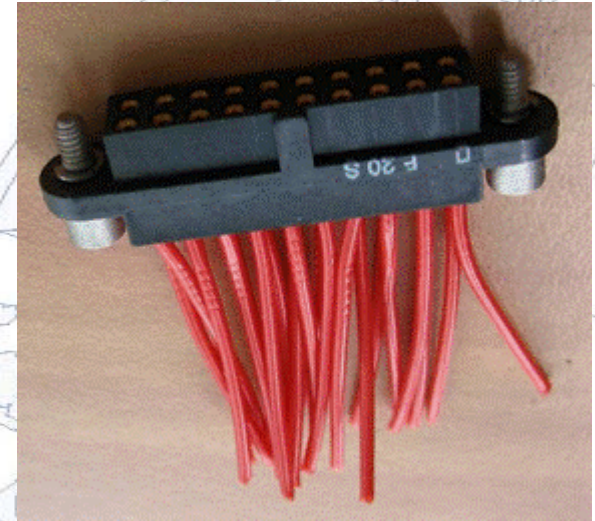
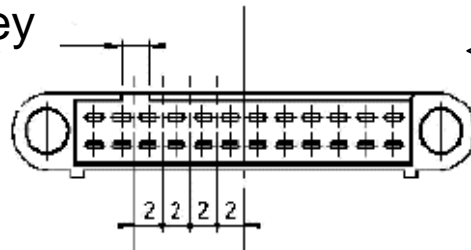
# 誤挿入防止機構

## HOUSING POLARIZATION KEY :

Polarization Key



Shift of Key



この「key」は加工箇所を、  
右または左へ2mmステップ  
で移動可能です。

# CMM 320 シリーズ

## CMM 320:

3列ピン配置 ; 6-120ピン LFコンタクト(信号ピン) ; 最大20ピン HF/HP  
コンタクト ; 複数固定具 ; 誤挿入防止機構



LF



HP/LF



HF/LF/HF



HP

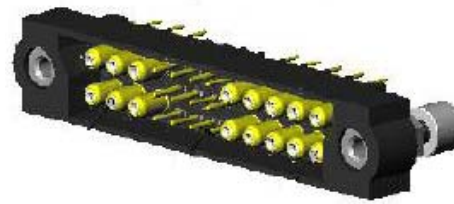
# CMM 340 シリーズ

## CMM 320:

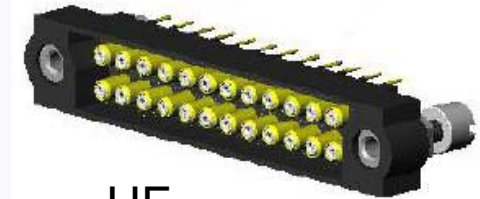
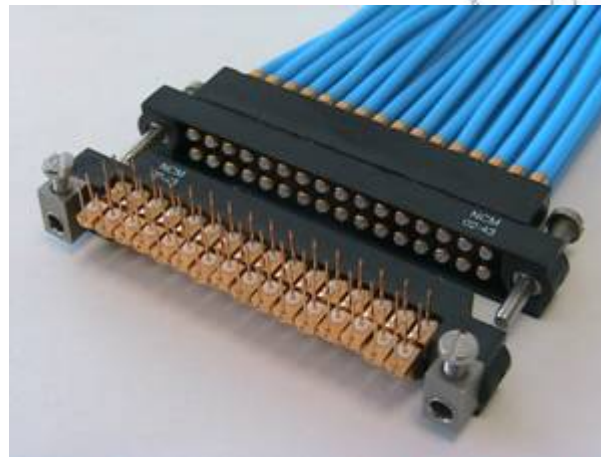
3列ピン配置 ; 6-104ピン LFコンタクト(信号ピン) ; 最大64ピン HF/HP  
コンタクト ; 複数固定具 ; 誤挿入防止機構



LF/HF



HF/LF/HF



HF

# 環境仕様

- ❖ 温度範囲 :  $-60^{\circ}\text{C} \sim +260^{\circ}\text{C}$   
リフローハンダプロセス対応 ( $+260^{\circ}\text{C}$ )
- ❖ 耐振動性 : 0.75 mm, 10 g RMS 6時間ランダム(サイン波)
- ❖ 耐衝撃性 : 100 g、6ms
- ❖ 耐溶解性 : HcFc 141 bMGX (ATOCHEM) 溶媒
- ❖ ソルトスプレイテスト : 96 時間
- ❖ 湿度 : 56日間、90%湿度

The CMM are designed to meet or exceed the relevant electrical and environmental performances described in MIL-C-55302 & BS-9525-F0033 standards.



# Low Frequency (LF) コンタクト(信号ピン)

## SPECIFICATIONS with LF contact:

Possible to crimp :  
AWG 22 / 24-28 / 30-32

Male						
Female						
	Straight PCB Type Y	90° PCB Type V	Straight SMT Type T	90° SMT Type R	Crimp Type S - C	Straight PCB Type PF Press fit

- ❖ Contact part gold plated 1,27  $\mu$ , resistance max.10 m $\Omega$
- ❖ All contacts 3A max. @ 25° C and 2,2A max. @ 85° C
- ❖ Working voltage 240Vdc @ 800V DC Proof voltage @ 1.200V DC
- ❖ Insulation resistance 1.000M $\Omega$  min.

# High Frequency (HF)コンタクト(高周波ピン)

## HF : ( 30 series Ø 3.0mm)

Male									
Female									
	Straight PCB	90° PCB	Straight SMT	90° SMT Card edge	Straight Crimp	90° Crimp	Straight solder	90° solder	
	Type D				Type E				

- ❖ IMPEDANCE 50 Ω
- ❖ SWR (Station Wave Rate) < 1,05 + 0,04 F (GHz)

## HF : ( 22 series Ø 2.2mm)

Male									
Female									
	Straight PCB	90° PCB	90° PCB	Straight SMT	90° SMT	Straight Crimp	90° Crimp	Straight solder	90° solder
	Type D				Type E				

- ❖ FREQUENCY RANGE  
Series 30 : 6 GHz  
Series 22 : 1,5 GHz
- ❖ Insulation between 2 contacts -100dB
- ❖ Insulation resistance 10<sup>6</sup> MΩ / 250 Vrms



# High Power (HP)コンタクト(大電力ピン)

## HP : (30 series Ø 3.0mm)

Male								
Female								
	Straight PCB	90° PCB	90° SMT	90° SMT Card edge	Straight Crimp	90° Crimp	Straight solder	90° solder
	Type D				Type E			

❖ Contact resistance  
max. 6 mΩ

❖ Intensity

Series 30 : 20 A

Series 22 : 10 A

## HP : (22 series Ø 2.2mm)

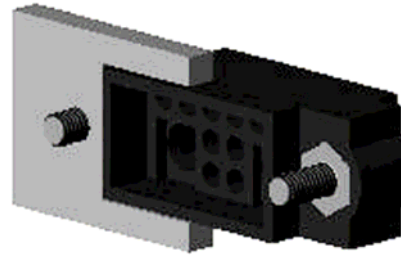
Male								
Female								
	Straight PCB	90° PCB	Straight SMT	90° SMT	Straight Crimp	90° Crimp	Straight solder	90° solder
	Type D				Type E			

❖ Max voltage  
1000 V (RMS)

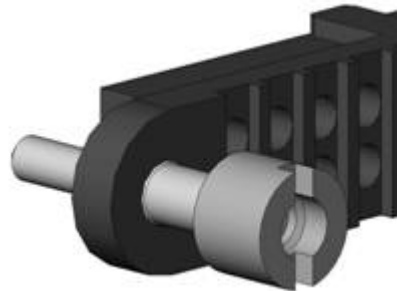
❖ Operating voltage  
180 V AC/500 mA

# 固定具

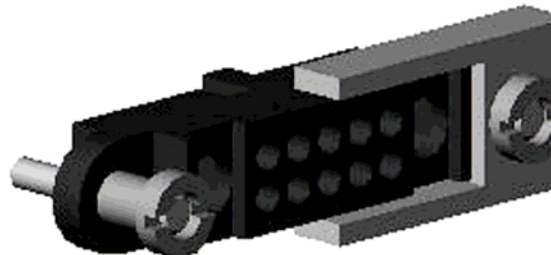
LOCKED



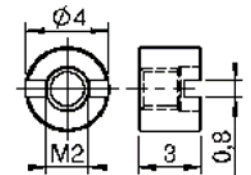
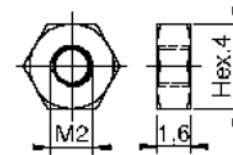
RACK



FLOATING



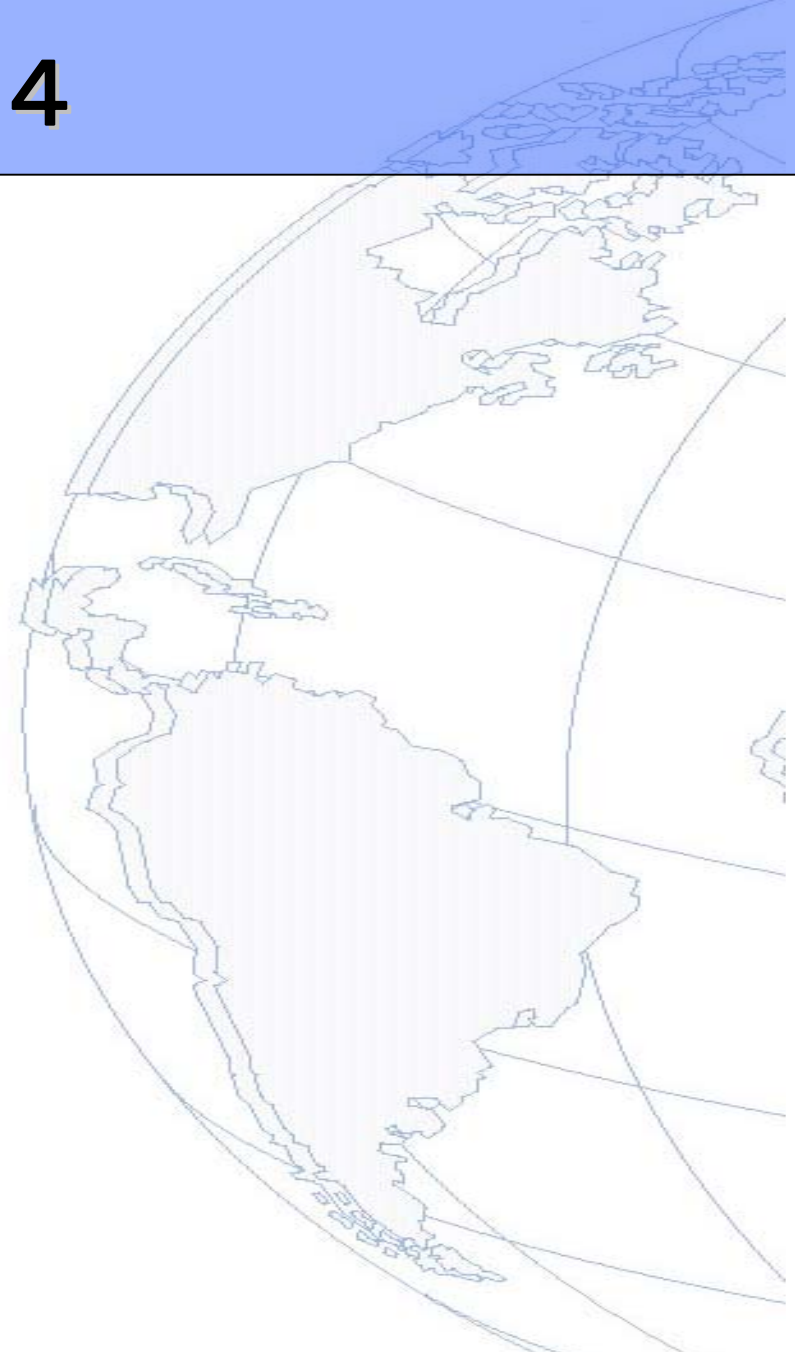
ナット オプション：  
六角 または スタンド





# CHAPTER 4

## CMMの用途



# CMMの用途



Not contractual pictures

# WHO USES

THALES



EADS  
THALES AVIONICS  
THALES SAS  
THALES TDA  
THALES AIR DEFENSE  
THALES RADARS  
MESSIER-BUGATTI  
ALTREL  
ELNO SN  
SNECMA  
SERMAT  
MATRA DEFENSE  
AIRBUS  
LOCKHEED MARTIN  
BF GOODRICH AERO  
SOTREM-SEO  
MEGGITT

ZODIAC :  
- IN SNEC  
- PRECILEC  
- INTERTECHNIQUE  
SEFEE  
MBDA  
CONVERGIE  
ALCATEL SPACE  
SAGEM DEFENCE  
EUROCOPTER  
DASSAULT AVIATION  
ELBIT SYSTEMS  
DIEHL AVIONIK  
VIBRACHOC  
ROCKWELL COLLINS  
TRIMBLE NAVIG.  
SAAB BOFORS

SMITHS AEROSPACE  
PENNY & GILES  
TRW (LUCAS)  
ROLLS ROYCE  
KONGSBERG  
ULTRA ELECTRONICS  
SOREP ERULEC (Thales Micro)  
MEUSONIC  
BAE SYSTEMS  
CES  
EADS TESTS & SERVICES  
GENERAL DYNAMICS  
BOEING AIRCRAFT  
RAYTHEON ELECTRONIC  
EDSN  
METRUM DATATAPE  
...

Raytheon







# Success Story : CMM 220

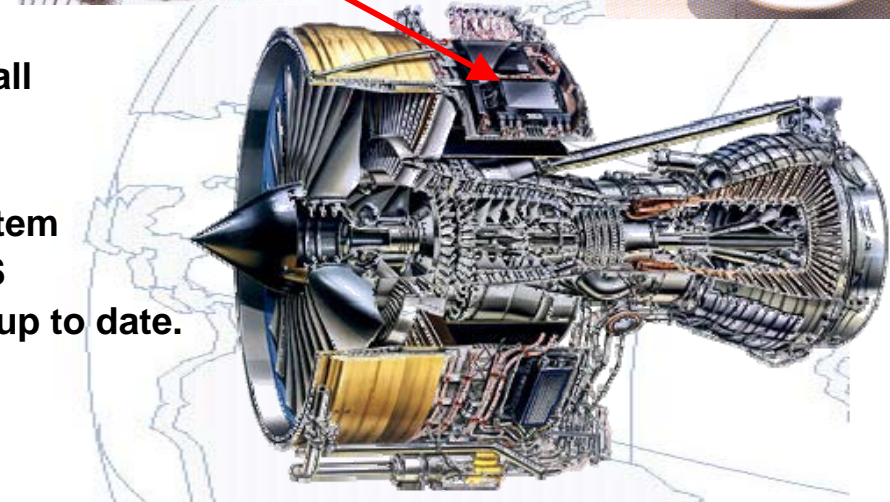
**9 CMM 220 PNs inside electronic modules  
(eg. 222SG-18-M11)**

Customer is LUCAS (TRW) building FADEC units for Rolls Royce jet engines. The Lucas FADEC is used in all the TRENT series of engines.

FADEC - Full Authority Digital Electronic Control - system on the Trent 500 engines from Rolls Royce for AIRBUS A340-600 aircraft, the world largest civil flying aircraft up to date.

## Advantages :

Traditionnally HE801 connectors were used. For space & weight saving the CMM 220 2mm pitch product provides a satisfactory alternative. Provision of samples matching the exact customer requirement was fundamental in winning this business. NICOMATIC solution was also chosen for its resistance to high vibration, shock severity and temperature changes (resists up to 250° C). Interconnection system CMM 220 permitted to mix different type of contacts inside one connector : signal, high power, coax. New generation FADEC insists a life cycle min. 10 years.



**AIRBUS A340-600**





# Success Story : CMM 200

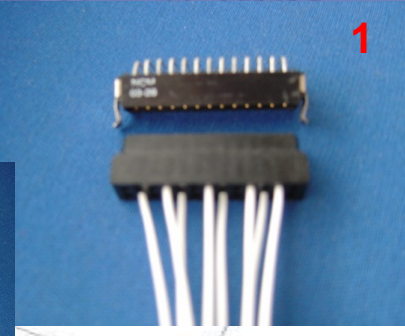
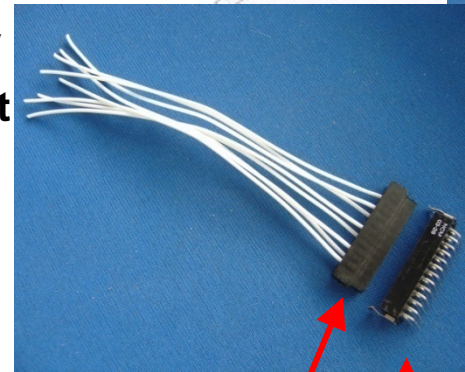
## ALSTOM

builds trains which run on every continent : they engineered and built the TGV, the world's fastest train, Singapore's automatic metro and almost the entire fleet of metros for the city of Paris.

Inside the train Cab radio inter-wagon communication system (digital & analogical equipment), CMM products from NICOMATIC have been selected. The system is for all trains in France & mounted in Brazil.

### Advantages :

- saves space on the PCB (small footprint)
- holds well at 1 500 V
- good compromise between standard connector (201V26L) & specific housing developed upon request, well serviced



P/N 201V26L  
+ development of specific housing





# Success Story : CMM 220

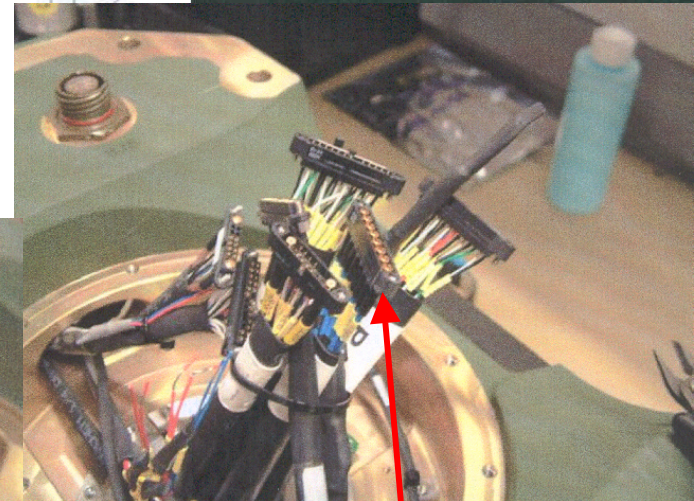
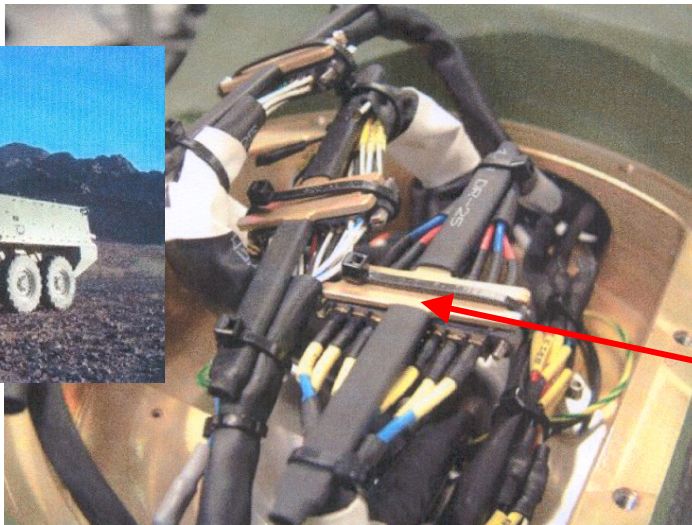
## REMOTE WEAPON STATION (RWS)

Kongsberg Defence & Aerospace

Production of 350 systems for the US Stryker Program,  
7 500 CMM connectors and the project is still growing.

### Advantages :

- Combination of signal, power and coax
- Easy to customize
- Conventional termination techniques
- Small sizes and low masses
- One time reinsertion possible



Slip ring interfaces 1 & 2

Cabled CMM connectors



# Success story : CMM 220



## RAFALE MARINE By Dassault Aviation

DASSAULT is one of the major players in the global civil and military aviation industry - French group, 50.21% held by the private Groupe Industriel Marcel Dassault, which in turn is owned by the Dassault family. The other shareholders are EADS France (46.30%) and private investors (3.49%).

The RAFALE is available as a single seater and as a two-seater in its land (C,B) variant and as a single-seater in its carrier capable (M) variant, featuring 80% commonality between them, with a single basic platform and mission system.

The challenge launched by the French armed forces was to **build a non-detectable lethal aircraft with still a high manoevrability performance.**

**CMM connectors are used in the radar system**, a unique one given the double configuration - able to **monitor ground and to detect flying threats simultaneously.** The radar can hold up to 10 targets at the same time (real capacity is secret) and still continue to look for other (enemy or friend id made possible).

The Rafale has many sensors on-board and also 2 cameras (1 for night vision) & 1 anti-measure system. The approved F1 standard (Marine version) equipment comprises 4 MICAT air-to-air missiles (long distance) and 2 MAGIC missiles (short distance combat). 2 engines with 7.5 Ton pressure for each for a plane weight of 15 ton.

### Advantages :

- Small and compact design of CMM



RBE2



OSF



**CMM inside  
radar detection  
system**



# Success story : CMM 220 mixed, x 6 P/Ns inside Sigma project



## Selex Sensors and Airborne Systems

High Performance Thermal Imaging Core  
Selex Sensors and Airborne Systems Ltd (SELEX S&AS) (originally Marconi) is one of Europe's leading sensors solutions companies and the UK's foremost supplier of electronic systems for military platforms.



## Advantages :

- Mixed technology in one package
- 2mm pitch saves board space
- No MOQs
- Robust and suitable for high vibration applications



Production 500 sets in a first row...





# Success Story : CMM

Project NLAW  
(Next Generation Light Anti-tank Weapon) :

<http://products.saab.se/PDBWeb/ShowProduct.aspx?ProductId=640>

Each NLAW contains 15 pcs CMM. Because it's individual application.

Our UK distributor got order of 15 000 pcs CMM for each lot of production.

