

May 2019

AVNET[®] ABACUS

CMC CONNECTION SYSTEM FAMILY OVERVIEW



• APTIV •

Content

Why CMC?

Market environment and
value proposition

Portfolio Overview

Portfolio scope

Technical Overview

Design features

Part Numbers

Content

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The Challenge

- Limited range of products and supplier options.
- Market needs for compact and high-density connectors.
- Connectors suitable for a harsh environment.

The Solution

Aptiv's wide range of CMC products are ideal for **engine management, brake control** and a variety of other **electronic control unit applications** because of the high density pin count, yet compact size.

The CMC connection system offers you the benefits of engineering technology to **reduce emissions** to meet Euro 7 regulations and withstand **harsh environment** situations, due to the **robust sealing** properties on the connector side. The Aptiv CMC 86 way connector is already compatible with current 204 way header solutions, which allow for **more power and signal transfers** within the same **packaging constraints** for ECUs on combustion and electrical motors.



Robust features, meaningful benefits

KEY FEATURES

- TPA front holder latch for lock & unlock
- Smooth guided terminal insertion
- Polarized Terminals
- Clean body terminals friendly to block/mat seal

KEY BENEFITS

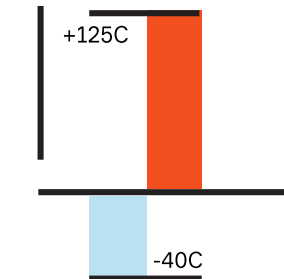
- High Terminal Retention Force
- Standard footprint interface interchangeable with multiple suppliers
- A wide product range
- Mat seal is pre-closed by means of a membrane on the 0.64 mm cavities (no need for the cavity plug)
- Easy cable assembly

VIBRATION

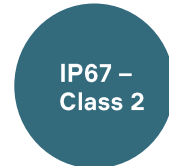


Sine (G)

TEMPERATURE



SEALING



Water Proof Class -
Immersion plus
IPx9K

VOLTAGE



AVAILABLE CONFIGURATIONS

Blade Configurations	0.64, 1.5, Mixed
Cavity Configurations	32, 48, 64, 86 way
Genders	Male (Wire-to-board) Female (Cable Housing)
Connector Sealing	Sealed
Terminal Type	Clean Body
Terminal Sealing	Mat Seal
Terminal Plating	Tin (Zn)*
Cable Size	0.22 - 2.5mm ² on copper aluminum dR™ (differential ratio)

APPLICATIONS

Chassis

Engine compartment

ECU

*Alternative plating available

Content

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Market environment and
value proposition

Portfolio Overview

Portfolio scope

Technical Overview

Design features

Part Numbers

A wide family range



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Connectors

- 32, 48, 64, 86, 112, & 154 way configurations
- Sealed applications
- TPA front holder latch for lock & unlock



Terminals

- 0.64, 1.5, and 2.8 mm blade sizes
- 0.22 – 2.5 mm² cable sizes
- Tin plating options



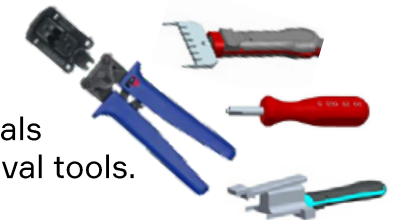
Seals

- Cable seals and cavity plugs
- Cover all CMC cavity sizes



Hand Crimp Tool

- Covers female and male terminals
- Extraction, insertion, and removal tools.



The **right connector** for the right job



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Performance	32 Ways	48 Ways	64 Ways	86 Ways	112 Ways	154 Ways
Family	GTS	GTS	GTS	GTS, APEX	GTS	GTS
Series	Mixed	Mixed	Mixed	Mixed	Mixed	Mixed
Cavities	32	48	64	86	112	154
Terminal(s) size (mm ²)	0.64, 1.5	0.64, 1.5	0.64, 1.5	0.64, 1.5, 2.8	0.64, 1.5	0.64, 1.5, 2.8 (53 Way)
Temperature Range	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C	-40°C to +125°C
Terminal retention force	80N > 100N	80N > 100N	80N > 100N	80N > 100N	80N > 100N	80N > 100N
Material	PBT GF15	PBT GF15	PBT GF15	PBT GF15	NYLON 66 GF30	PBT GF30
Current (A)* (Terminal size - wire)	6A (0.64 - 0.5mm) 10A (1.5 - 2.0mm)	5.2 A (0.64 - 0.5mm) 8.6A (1.5 - 2.0mm)	4.8 A (0.64 - 0.5mm) 7.8A (1.5 - 2.0mm)	2.5 A (0.64 - max) 6A (1.5 - max) 13A (2.8 - max)	See connector current ratings	

Current tested on a half loaded connector at a temperature increase of 40°C

Content

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Portfolio Overview

Portfolio scope

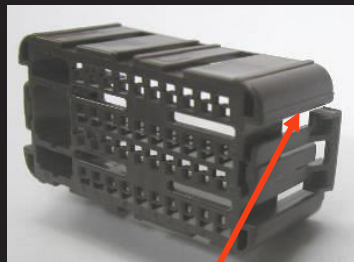
Technical Overview

Design features

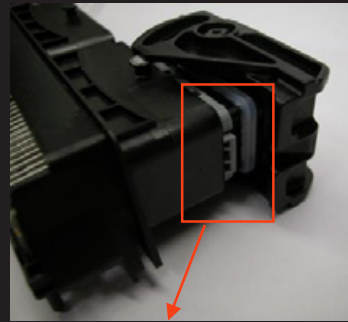
Part Numbers

CMC Female – **Front holder** (TPA) Mating Security

If the TPA (Terminal Position Assurance) is not locked, it is impossible to connect to the interface

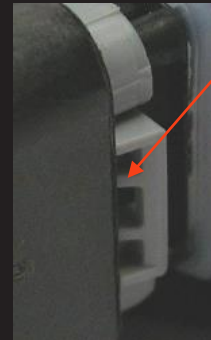


Front holder latch for lock & unlock



APTIV PATENT

Interference between TPA and pin header wall



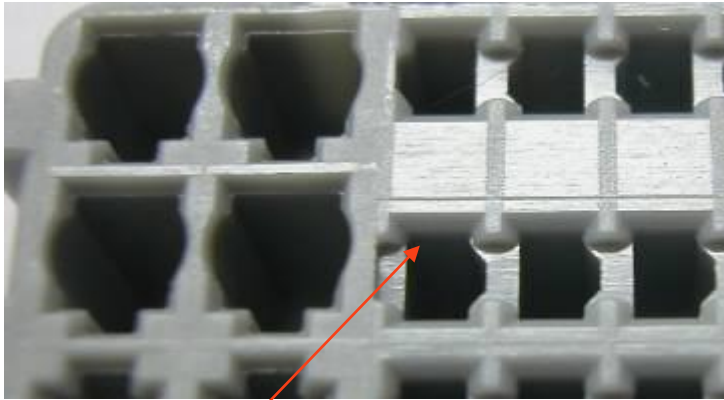
Engagement of lever is not possible



CMC Female – Rear Grid and Housing

Smooth Guided Terminal Insertion

Clear audible click



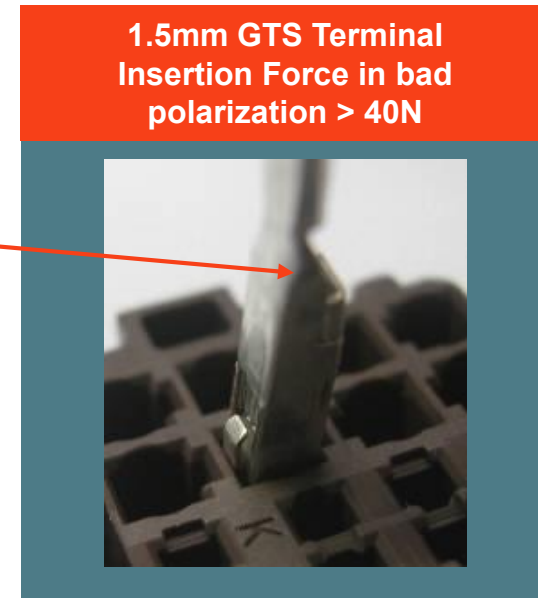
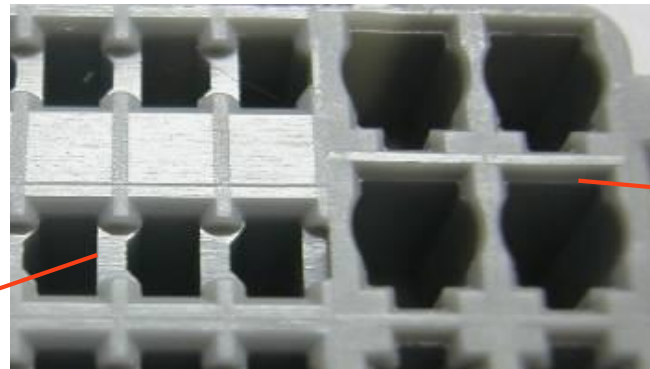
Chamfer on the rear grid



Chamfer on the terminal cavities after the grommet insertion

CMC Female – Terminal Polarization

Polarization by the **rear holder** at the early stage of terminal **insertion**



APTIV PATENT

CMC Female – **Easy** Cable Assembly

Easy as :

1

Terminal Insertion



2

TPA Lock



3

Cover Assembling



Easy assembling at harness Maker



Content

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value proposition

Portfolio Overview


Portfolio scope

Technical Overview

Design features


Part Numbers

Part Numbers

32 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33503152	32W Header	Blue	-
	33503150	32W Header	Brown	-
	33503149	32W Header	Grey	-
	33503151	32W Header	Black	-
	13851306	32W Female Sealed	Black/Right	-
	13741940*	32W Female Sealed	Black/Left	-
	33500498	32W Female Sealed	Blue/Right	-
	33500497	32W Female Sealed	Blue/Left	-
	33500496	32W Female Sealed	Brown/Right	-
	33500495	32W Female Sealed	Brown/Left	-
	33500494*	32W Female Sealed	Grey/Right	-
	33500507	32W Female Sealed	Grey/Left	-
	13851307	32W Housing Dress Cover	Black	90°


**Compatible with Aptiv 112w headers and/or other suppliers*

Part Numbers


48 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33503457	48W Header	Black (mates black key housing)	-
	13956255	48W Female Sealed	Black/Right	-
	13956021	48W Female Sealed	Black/Left	-
	33500420*	48W Female Sealed	Brown/Right	-
	33500419*	48W Female Sealed	Brown/Left	-
	33500500*	48W Female Sealed	Grey/Right	-
	33500499*	48W Female Sealed	Grey/Left	-
	13956254	48W Housing dress cover	Black	90°
	33517228	48W Housing dress cover	Black	45°

**Compatible with Aptiv 112 & 154w headers and/or other suppliers*

Part Numbers


64 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33504510	64W Header	Black	-
	35110623	64W Header	Grey	-
	13648596	64W Female Sealed	Black/Right	-
	13722628	64W Female Sealed	Black/Left	-
	33500504	64W Female Sealed	Grey/Right	-
	33500503	64W Female Sealed	Grey/Left	-
	13648597	64W Housing Dress Cover	Black	90°

Part Numbers*


86 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33156001	86W Female Sealed	Brown/Right	-
	33155995	86W Female Sealed	Brown/Left	-
	33156000	86W Female Sealed	Grey/Right	-
	33155993	86W Female Sealed	Grey/Left	-
	33121915	86W Dress Cover	Black	90°
	33121914	86W Lever	Grey	90°
	33121921	38W Female B Module (for 86w)	-	-
	33121920	38W Female A Module (for 86w)	-	-

*for compatible headers, please contact your local sales representative for more information

Part Numbers


112 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33504045	112W Header	Black/Grey/Brown	-
	13741940	32W Female Sealed	Black/Left	-
	33500494	32W Female Sealed	Grey/Right	-
	33500419	48W Female Sealed	Brown/Left	-
	13851307	32W Housing Dress Cover	Black	90°
	13956254	48W Housing dress cover	Black	90°
	33517228	48W Housing dress cover	Black	45°

Part Numbers


154 Ways	Part Number	Connector Type	Color / Wire Direction	Orientation
	33513909	154W	(48W Grey+ 53W Brown + 53W Black)*	-
	13956255	48W Female Sealed	Grey/Right	-
	13956021	48W Female Sealed	Grey/Left	-
	13956254	48W Housing dress cover	Black	-
	33517228	48W Housing dress cover	Black	90°

*53W pocket compatible with generic connectors on market


Part Numbers

Terminals	Part Number	Terminal type	Wire Size	Orientation	Associated With
	13955989	0.64 GTS	0.35	Tinned	32, 48, 64, 86, 112, & 154 Ways
	13648598	0.64 GTS	0.50	Tinned	32, 48, 64, 86, 112, & 154 Ways
	13712871	1.5 GTS	0.50 - 0.85	Tinned	32, 48, 64, 112, & 154 Ways
	13741954	1.5 GTS	1.0 - 1.30	Tinned	32, 48, 64, 112, & 154 Ways
	13749482	1.5 GTS	1.4 - 2.0	Tinned	32, 48, 64, 112, & 154 Ways
	13774269	1.5	0.5 - 0.85	Tinned	86 Ways
	13860784	1.5	1.0 - 1.3	Tinned	86 Ways
	13737773	1.5	1.4 - 2	Tinned	86 Ways
	10810375	2.8	0.5 - 1.25	Tinned	86 Ways
	13627267	2.8	1.5 - 2.5	Tinned	86 Ways

Part Numbers

Cavity Plugs and Seals	Part Number	Terminal type	Color	Case of Use	Associated With
	13768626	0.64	White	Insertion of a wrong cavity – repairing purpose	32, 48 & 64 Ways
	13826722	1.50	Blue	Unloaded 1.5 mm cavity	32, 48 & 64 Ways
	10736278	0.5 - 0.85	Yellow	Single wire seal	86 Ways
	10736279	1.0 - 2.0	Green	Single wire Seal	86 Ways
	10779162	0.5 - 1.0	Blue	Single wire Seal	86 Ways
	13578695	1.25	Brown	Single wire Seal	86 Ways
	10779159	1.5 - 2.0	Red	Single wire Seal	86 Ways
	10779161	2.5	Yellow	Single wire Seal	86 Ways
	10787316	1.5	White	Single wire Seal	86 Ways
	10779160	2.8	Green	Single wire Seal	86 Ways
13629105	0.64	White	Cavity Plug	86 Ways	

Part Numbers*

Tooling	Part Number	Description	Associated With
	10915564	0.64mm Terminal Extraction tool	32, 48, 64 & 86 Ways
	10915565	1.5mm Terminal Extraction tool	32, 48, 64 & 86 Ways
	10915566	Cover removal tool	32, 48 & 64 Ways
	33105886	0.64mm Dummy Plug insertion tool	32, 48 & 64 Ways
	33105887	1.5 Dummy Plug insertion tool	32, 48 & 64 Ways
	TBC*	2.8 mm Female Terminal Extraction tool	86 Ways
	33513040	TPA removal tool	32, 48 & 64 Ways
	33514306	Crimper 1.5 GTS	32, 48 & 64 Ways
	33514360	Crimper 0.64 GTS	32, 48 & 64 Ways
	TBC*	2.8 Plug insertion tool	86 Ways

*for tooling requirements, please contact your local sales representative for more information

Thank you.