

CMC hybrid connectors and mating headers provide sealed, high-density, modular and cost-effective wire-to-board and wire-to-wire connection systems for heavy-duty powertrain and body-electronics applications in automotive and commercial vehicles

The CMC connector family from Molex is a sealed, high-density connection system developed for the transportation industry. It is designed to perform in high-conductivity applications and in harsh environments. CMC connection systems are used in various powertrain applications such as engine-control units (ECU's), compartment applications, gear boxes, electronic park brakes and suspension controllers, together with body-electronics applications.

The 32-circuit wire-to-wire extension to Molex's CMC family allows harness makers to utilize only one female connector and maintain only one terminal system in wire-to-board and wire-to-wire applications.

Standard CMC headers for wire-to-board connections are available in a variety of off-the-shelf 1-, 2- or 3-pocket configurations. CMC connection system is validated to following standards: ISO 8092-2, PSA B217050, USCAR 2, AK LV 214 and JD 53.3.

CMC 32- and 48-circuit connection systems have now been enhanced to accommodate SAE specified TXL 18 AWG wires. For more information on Molex's CMC product family, visit: www.molex.com/product/cmc.html.

FEATURES AND BENEFITS

High performing sealed connection system using matte seal technology for CP 0.635mm and 1.50mm terminals and using single wire seal technology (SWS) for CP 2.80mm terminal

Can perform in sealed applications where IPx9K rating and 500m bar water tightness are required

High density system due to compact connector design and fine pitch size of 2.54mm

Requires reduced space on customer printed circuit boards (PCB's) or engine compartments

System features three different terminal sizes CP 0.635mm, 1.50mm and 2.80mm

Supports low, medium and high current applications from 2.5A up to 21.0A to perform in harsh environments and high conductivity applications

System offers several color codings and mechanical polarization that reduce cycle time during harness assembly due to easy visual installation and avoid mis-mating of the headers and connectors

Cost effective system; uses same connector type for different harness size needs

32-circuit wire-to-wire system featuring male plug designed for either bracket or clip mounting

Allows for adoption of complete CMC connection system throughout entire vehicle Plug design allows flexibility based on a customer's space and application requirements

Blind plugs available to close unused connector cavities

Secure sealing system meeting IP6K7 and IP6K9K and 500mbar air pressure provides design flexibility and increases efficiency to reduce costs

CMC Hybrid Connectors Standard and Power Versions

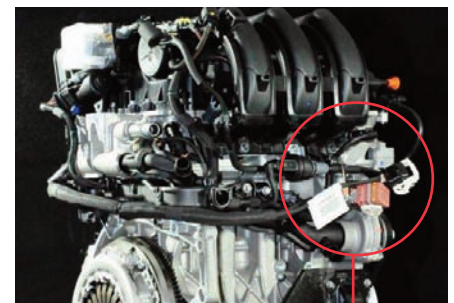
- Standard Female Connectors**
 64319 32-Circuit Connector
 64320 48-Circuit Connector
 64325 Blind Plugs

- Power Female Connectors**
 64318 28-Circuit Connector
 64321 53-Circuit Receptacle
 64325 Blind Plug and SWS
 64326 22-Circuit Connector

- CP Terminals**
 64322 CP 0.635mm
 64323 CP 1.50mm
 64324 CP 2.80mm

- Wire-to-Board Connection**
 36638, 500762, 502225, 98997
 64333, 64334, 34763, 47745

- Wire-to-Wire Connection**
 501820 32-Circuit Male Plug
 501826 32-Circuit Wire Cap Straight
 98649 32-Circuit Wire Cap Left/ Right
 501827 0.60mm Male Terminal
 501828 1.50mm Male Terminal



Engine harness application: 53- and 32-circuit CMC connectors in use

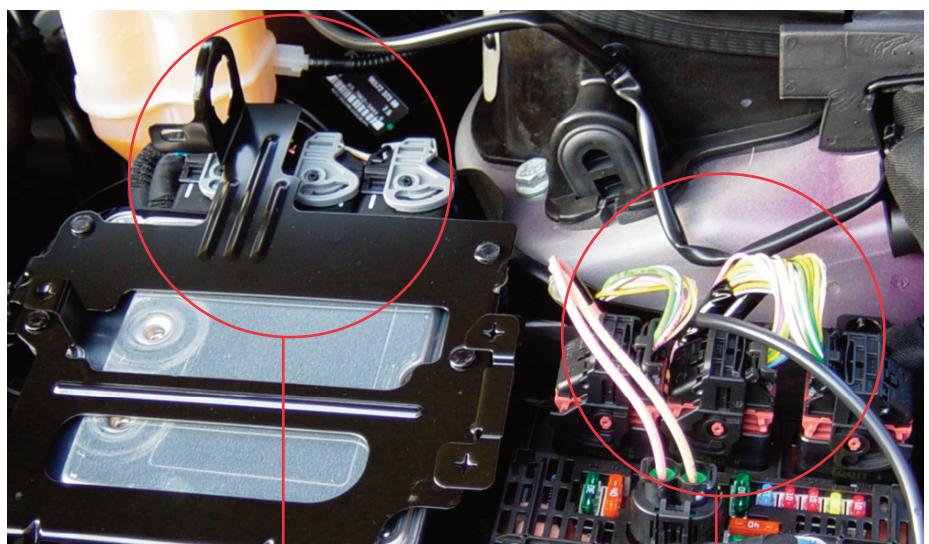
MARKETS AND APPLICATIONS

- Applications: Wire-to-Board
 Powertrain
 Engine Control Unit (ECU)
 Gear box
 Suspension controller
 Electronic parking brake

- Body Electronics
 Junction/Fuse box
 Lighting control system
 Electric doors

- Applications: Wire-to-Wire
 Powertrain
 Body Electronics

- Transportation Market:
 Cars
 Trucks
 Buses
 Agricultural equipment
 Construction equipment
 Motorcycle
 Marine



Powertrain ECU application: 112-circuit header with mating 32+48+32 circuit connectors

Body control, fuse box application: 28-circuit CMC power connectors in use

SPECIFICATIONS

Main Technical Characteristics

Vibration: 15G
 Sealing: IP6K7, IP6K8, IP6K9K
 Operating temperature: -40 to +125°C
 Available wire sizes:
 CP 0.60mm² terminals: 0.35 to 0.75mm²,
 18 TXL AWG, 20 TXL AWG
 CP 1.50mm² terminals: 0.50 to 2.00mm²,
 14 TXL AWG, 16 TXL AWG
 Available plating options:
 Tin (Sn) and Gold (Au)

Reference Information

Packaging: Box with carton interleaf
 Mates with: CMC Headers shown on page 7
 Use with:
 Terminals:
 Series 64322 CP 0.635mm
 Series 64323 CP 1.50mm
 Plugs:
 64325-1010 for CP 0.635mm cavity
 64325-1023 for CP 1.50mm cavity
 Wire Caps:
 32-Way: 64319-1201
 48-Way: 64320-1301
 Designed in: Millimeters

Electrical

Current:
 CP 0.635mm terminals - max.
 2.5A (0.75mm² wire)*
 CP 1.50mm terminals - max.
 12.0A (2.00mm² wire)*

*Current tested on a fully loaded connector;
 current for temperature increase of 40°C

ORDERING INFORMATION

Female Connectors

Order No.	No. of Circuits	Colour Coding	Wire Output
64319-3211	32	Black	Right
64319-3216		Blue	
64319-3218		Grey	
64319-3219		Brown	
64319-1211	32	Black	Left
64319-1216		Blue	
64319-1218		Grey	
64319-1219		Brown	
64320-3311	48	Black	Right
64320-3315		Green	
64320-3318		Grey	
64320-3319		Brown	
64320-1311	48	Black	Left
64320-1315		Green	
64320-1318		Grey	
64320-1319		Brown	
64319-2211	24	Black – Row 1 closed	Right
64319-2218		Grey – Row 4 closed	
64319-4211		Black – Row 1 closed	
64319-4218		Grey – Row 4 closed	
64320-2311	36	Black – Row 1 closed	Left
64320-2319		Brown – Row 1 closed	
64320-4311		Black – Row 1 closed	Right
64320-4319		Brown – Row 1 closed	

Contact Resistance:
 0.635mm terminals: 8 milliohms max.
 1.50mm terminals: 4 milliohms max.
 Dielectric Withstanding Voltage:
 1000V AC for 1 minute
 Insulation Resistance:
 100 Megohms min.

Mechanical

Contact Insertion Force:
 0.635mm terminal: 12N max.
 1.50mm terminal: 20N max.
 Contact Retention to Housing:
 0.635mm terminal: 60N min.
 1.50mm terminal: 100N min.
 Wire Pull-Out Force: 100N min.
 Mating Force: 70N max.
 Unmating Force: 70N max.
 Durability: 20 mating cycles

Physical

Housing: PBT, Glass-filled
 RoHS: Yes
 Operating Temperature: -40 to +125°C
 Note: Check mating header temperature class
 for potential limitations

Sealing

IP6K7, IP6K8, IP6K9K

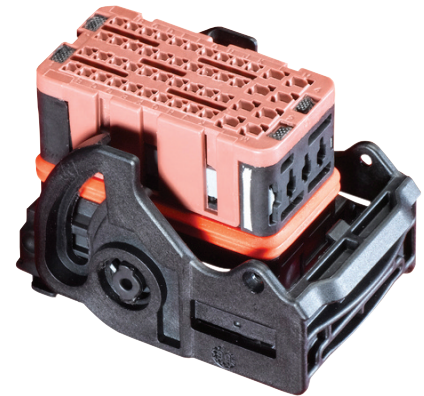
For more details please refer to PS-64319-001
 / PS-64319-002 / AS-64319-002

CMC Hybrid Connectors Standard and Power Versions

64319 32-Circuit Connector
 64320 48-Circuit Connector
 64325 Blind Plugs



32-Circuit CMC Connector



48-Circuit CMC Connector

Wire Caps

Order No.	Circuits	Housing Color
64319-1201	32	Black
64320-1301	48	

Blind Plugs

Order No.	Terminal Width	Housing Color
64325-1010	0.635mm	White
64325-1023	1.50mm	Orange

SPECIFICATIONS

Main Technical Characteristics

Vibration: 15G
 Sealing: IP6K7, IP6K8, IP6K9K
 Operating temperature: -40 to + 125°C
 Available wire sizes:
 CP 0.60mm² terminals: 0.35 to 0.75mm²,
 18 TXL AWG, 20 TXL AWG
 CP 1.50mm²: 0.50 to 2.00mm²,
 14 TXL AWG, 16 TXL AWG
 CP 2.80mm² terminals: 0.50 to 5.00mm²,
 10, 12, 14, 16, 18, 20 TXL AWG
 Available plating options:
 Tin (Sn) and Gold (Au)

Reference Information

Packaging: Box with carton interleaf
 Mates with: CMC Headers shown on page 7
 Use with:
 Terminals:
 Series 64322 CP 0.635mm
 Series 64323 CP 1.50mm
 Series 64324 CP 2.80mm†
 Plugs:
 64325-1010 for CP 0.635mm cavity
 64325-1023 for CP 1.50mm cavity
 64325-1091 seal plug for CP
 2.80mm cavity
 Wire Caps:
 28-Way: 64320-1301
 53-Way: 64321-1101
 Designed in: Millimeters

Electrical

Current:
 CP 0.635mm
 terminals - max.
 2.5A (0.75mm² wire)*
 CP 1.50mm terminals - max.
 12.0A (2.00mm² wire)*
 CP 2.80mm terminals - max.
 21.0A (5.00mm² wire)*
 *Current tested on a fully loaded connector;
 current for temperature increase of 40°C

Contact Resistance:
 0.635mm terminal: 8 milliohms max.
 1.50mm terminal: 4 milliohms max.
 2.80mm terminal: 3 milliohms max.

Dielectric Withstanding Voltage:
 1000V AC for 1 minute
 Insulation Resistance: 100 Megohms min.

Mechanical

Contact Insertion Force:
 0.635mm terminal: 12N max.
 1.50mm terminal: 20N max.
 2.80mm terminal: 25N max.

Contact Retention to Housing:
 0.635mm terminal: 60N min.
 1.50mm terminal: 100N min.
 2.80mm terminal: 100N min.

Wire Pull-Out Force: 100N min.

28-circuit: 64320
 Mating Force: 70N max.
 Unmating Force: 70N max.

53-circuit: 64321
 Mating Force: 80N max.
 Unmating Force: 80N max.

Durability: 20 mating cycles

Physical

Housing: PBT Polyester, Glass-filled
 RoHS: Yes
 Operating Temperature: -40 to +125°C
 Note: Check mating header temperature class
 for potential limitations

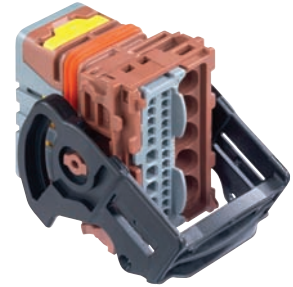
Sealing

IP6K7, IP6K8, IP6K9K

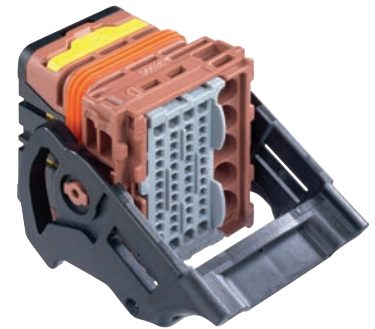
For more details please refer to
 PS-64318-001 / AS-64318-002
 PS-64321-001 / AS-64321-002

CMC Hybrid Connectors Standard and Power Versions

64318 28-Circuit Connector
 64321 53-Circuit Connector
 64325 Blind Plugs



28-Circuit CMC Connector



53-Circuit CMC Connector

ORDERING INFORMATION

Female Connectors

Order No.	Circuits	Color Key Coding	Wire Output
64318-3011	28	Black	Right
64318-3018		Grey	
64318-3019		Brown	
64318-1011		Black	Left
64318-1018		Grey	
64318-1019		Brown	
64321-2011	53	Black	Right
64321-2018		Grey	
64321-2019		Brown	
64321-1011		Black	Left
64321-1018		Grey	
64321-1019		Brown	

Wire Caps

Order No.	Circuits	Housing Color
64320-1301	28	Black
64321-1101	53	

Blind Plugs

Order No.	Terminal Width	Housing Color
64325-1010	0.635mm	White
64325-1023	1.50mm	Orange
64325-1091	2.80mm	Black

†Single wire seals (SWS) must be used with CP 2.80mm terminals - See page 5 for details

SPECIFICATIONS

Main Technical Characteristics

Vibration: 15G
 Sealing: IP6K7, IP6K8, IP6K9K
 Operating temperature: -40 to +125°C
 Available wire sizes:
 CP 0.60mm² terminals: 0.35 to 0.75mm²,
 18 TXL AWG, 20 TXL AWG
 CP 2.80mm² terminals: 0.50 to 5.00mm²,
 10, 12, 14, 16, 18, 20 TXL AWG
 Available plating options:
 Tin (Sn) and Gold (Au)

Reference Information

Packaging:
 Connector: Box with carton interleaf
 Wire Cap:
 Bulk pack in carton box
 Mates With:
 Currently no promotable mating part available;
 please contact Global Product Manager for details
 Use With:
 Terminals:
 Series 64322 CP 0.635mm
 Series 64324 CP 2.80mm†
 Blind Plugs:
 64325-1010 for CP 0.635mm cavity
 64325-1091 seal plug for CP 2.80mm cavity
 Wire Cap: 64319-1201
 Designed In: Millimeters

Mechanical

Contact Insertion Force:
 0.635mm terminal: 12N max.
 2.80mm terminal: 25N max.
 Contact Retention to Housing:
 0.635mm terminal: 60N min.
 2.80mm terminal: 100N min.
 Wire Pull-Out Force: 100N min.
 Mating Force: 80N max.
 Unmating Force: 80N max.
 Durability (min.): 20 mating cycles

Electrical

Current (max.):
 CP 0.635mm terminals - max.
 4.5A (0.75mm² wire)*
 CP 2.80mm terminals - max.
 26.0A (5.00mm² wire)*
 *Current tested on a fully loaded
 connector; current for temperature
 increase of 40°C

Contact Resistance (low level):
 0.635mm terminal: 8 milliohms max.
 2.80mm terminal: 3 milliohms max.

Dielectric Withstanding Voltage: No breakdown
 Insulation Resistance: 100 Megohms min.

Sealing

P6K7, IP6K8, IP6K9K

CMC Hybrid Connectors Standard and Power Versions

64326 22-Circuit Female Connector
 64319 Wire Cap
 64325 Blind Plugs



22-Circuit CMC Connector

Physical

Housing:
 PBT Polyester, Class UL-V0, Glass-filled
 Operating Temperature: -40 to +125°C
 RoHS: Yes
 For more details please refer to
 PS-64326-001 / AS-64318-002

ORDERING INFORMATION

Female Connectors

Order No.	Color Key Coding	Wire Output
64326-1001	Black	Right
64326-1005	Brown	
64326-1009	Blue	
64326-1002	Black	Left
64326-1006	Brown	
64326-1010	Blue	

Wire Caps

Order No.	Color
64319-1201	Black

Blind Plugs

Order No.	Terminal Width	Housing Color
64325-1010	0.635mm	White
64325-1091	2.80mm	Black

†Single wire seals (SWS) must be used with CP 2.80mm terminals - see page 5 for details

CONNECTOR INTERFACE COMPARISON – MOLEX CMC STANDARD AND POWER FEMALE CONNECTORS

	22-Circuit	24-Circuit	28-Circuit	32-Circuit	36-Circuit	48-Circuit	53-Circuit
0.635mm CP terminal count	20	18	18	24	30	40	40
1.50mm CP terminal count	-	6	5	8	6	8	8
2.80mm CP terminal count	2	-	5	-	-	-	5
Connector Interface							
Comment		Same interface as 32-circuit but row 1 or 4 closed			Same interface as 48-circuit but row 1 or 4 closed		

SPECIFICATIONS

CP terminals are used for the CMC Hybrid Connector system. Three different CP terminal sizes are available: 0.635mm, 1.50mm, and 2.80mm†. They support low, medium and high current data requirements.

The robust shape of CP terminals is specially designed to perform in high-conductivity applications and in harsh environments. It is a 2-piece design in which the terminal body is made out of high-conductivity copper alloy and the terminal box is made out of stainless steel.

CP terminals are available in tin and gold plating, and allow crimping of individual wire sizes as shown in the table below.

The HP (high-performance) 0.635mm CP terminal designed to withstand up to 50 mating cycles is available in gold plating.

CP 0.635mm terminal now allows crimping of SAE AWG 18 TXL wire to support requirements from US based customers.



CMC Hybrid Connectors Standard and Power Versions

CMC CP Terminals
 64322 CP 0.635mm
 64323 CP 1.50mm
 64324 CP 2.80mm
 64325 Single Wire Seals

ORDERING INFORMATION

CP Terminals

Order No.	Terminal Width	Plating	Wire Size in mm ² *	Wire Insulation diameter in mm*	Wire Size In AWG*
64322-1019	0.635mm	Tin (Sn)	0.35	1.25 - 1.40	22
64322-1029			0.75	1.60 - 1.90	18
64322-1039			0.5	1.40 - 1.70	20
64322-1219		1.27µm Gold (Au)	0.75	1.60 - 1.90	18
64322-1229			0.35	1.25 - 1.40	22
64322-1239			0.5	1.40 - 1.70	20
64322-1339	0.635mm HP		0.75	1.60 - 1.90	18
64322-1349		0.35	1.25 - 1.40	22	
64322-1359		0.5	1.40 - 1.70	20	
64323-1029	1.50mm	Tin (Sn)	0.5 to 1.0	1.40 - 2.15	18
64323-1039			> 1.0 to 2.0	2.10 - 2.80	14, 16
64323-1219		1.27µm Gold (Au)	0.5 to 1.0	1.40 - 2.15	18
64323-1319			> 3.0 to 5.0	3.40 - 4.00	10
64324-1019	†2.80mm	Tin (Sn)	> 2.0 to 3.0	2.65 - 3.45	12
64324-1029			> 1.0 to 2.0	2.10 - 2.80	14, 16
64324-1039			0.5 to 1.0	1.40 - 2.15	18, 20
64324-1049			> 3.0 to 5.0	3.40 - 4.00	10
64324-1119		1.27µm Gold (Au)	> 2.0 to 3.0	2.65 - 3.45	12
64324-1129			> 1.0 to 2.0	2.10 - 2.80	14, 16
64324-1139			0.5 to 1.0	1.40 - 2.15	18, 20
64324-1149			> 3.0 to 5.0	3.40 - 4.00	10



CP Terminals

*For more details please refer to AS-64322-001 / AS-64323-001 / AS-64324-001

Please refer to AS-64319-002 for terminal usage in harness assembly when using TXL 18 AWG wires

Single Wire Seals (SWS) for CP 2.80mm Terminal

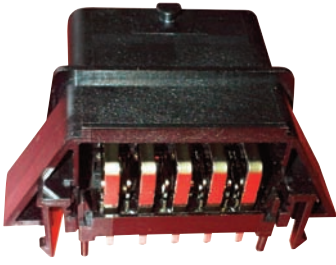
Order No.	Description	Color
64325-1332	For cable 1.29mm to 2.06mm	Red
64325-1345	For cable 2.03mm to 2.80mm	Green
64325-1358	For cable 2.80mm to 3.50mm	Gray
64325-1366	For cable 3.50mm to 4.21mm	Blue



Single Wire Seals

† Single wire seals (SWS) must be used with CP 2.80mm terminals

ORDERING INFORMATION



1 pocket CMC Header, series 47745
28-Circuit
Solder Tail



1 pocket CMC Header, series 64334
32-circuits
Solder Tail

CMC Hybrid Connectors Standard and Power Versions

Wire-to-Board Connection
36638, 500762, 502225, 98997
64333, 64334, 34763, 47745



1 pocket CMC Header, series 500762
48-Circuit
Solder Tail



1 pocket CMC Header, series 36638
48-Circuit
Solder Tail



1 pocket CMC Header, series 98997
53-Circuit
Solder Tail



2 pocket CMC Header, series 502225
80-circuits, 32+48
Solder Tail



2 pocket CMC Header, Series 36638
96-circuits, 48+48
Solder Tail



3 pocket CMC Header, series 64333
112-circuits, 32+48+32
Solder Tail



3 pocket CMC Header, series 34763
154-circuits, 48+53+53
Compliant-Pin, Pressfit

ORDERING INFORMATION

Right-Angle, Wire-to-Board Headers

Circuits	Part No.	Mates with CMC Connector	Mating color coding	Description	No. of pockets	Pin count 0.63mm	Pin count 1.50mm	Pin count 2.80mm	Terminal type
28	47745-0100	64318-1011 or 64318-3011	Black	28-circuit CMC header * Grey and Brown codings launching May 2013		18	5	5	
	47745-0XX0*	64318-1018 or 64318-3018	Grey						
	47745-0XX0*	64318-1019 or 64318-3019	Brown						
32	64334-0100	64319-3211	Black	32-circuit CMC header		24	8	0	
	64334-0300	64319-3219	Brown						
36	36638-0006	64320-2311 or 64320-4311	Black	36-circuit CMC header	1	30	6	0	Solder pin
	36638-0007	64320-2319 or 64320-4319	Brown						
	36638-0009								
48	36638-0013	64320-2311 or 64320-4311	Black	48-circuit CMC header		40	8	0	
	500762-0481	64320-1311 or 64320-3311	Black						
	36638-0002	64320-1311 or 64320-3311	Black						
	36638-0004	64320-1319 or 64320-3319	Brown						
	36638-0005	64321-1011 or 64321-2011	Black						
53	98997-1002	64320-2319 and 64320-4311	Brown	53-circuit Header		40	8	5	
72	36638-0001	64320-1319 and 64320-3311	Black	72-circuit Header		60	12	0	
80	502225-0801	64319-3211	Black	80-circuit Header	2	64	16	0	
96	36638-0011	64320-1319 and 64320-3311	Black	96-circuit Header		80	16	0	
112	64333-0100	64319-3211 and 64320-3319 and 64319-1218	Grey	112-circuit Header	3	88	24	0	
154	34763-0001	64321-2011 and 64321-2019 and 64320-1318	Grey	154-circuit Header		120	24	10	Compliant pin EON style

SPECIFICATIONS

Reference Information

Packaging:
Box with Carton Interleaf
Mates with:
CMC Receptacles – 32-Circuit
64319-1211
64319-3211
Use with:
CP Terminals:
Series 64322 CP 0.635mm
Series 64323 CP 1.50mm
Male Terminals:
501827-0101 (0.635mm)
501828-0101 (1.50mm)
Wire Cap:
501826-3201
98649-1003
Designed in: Millimeters

Mechanical

Contact Insertion Force:
0.635mm terminal: 12N max.
1.50mm terminal: 25N max.
Contact Retention to Housing:
Female Terminal:
0.635mm terminal: 60N min.
1.50mm terminal: 100N min
Male Terminal:
0.635mm terminal: 40N min.
1.50mm terminal: 80N min.
Wire Pull-Out Force: 100N min.
Mating Force: 70N max.
Unmating Force: 70N max.
Durability: 20 mating cycles

Electrical

Current: *
CP 0.635mm terminals – max. 2.5A
(0.75mm² wire)*
CP 1.50mm terminals – max. 12.0A
(2.00mm² wire)*
*Current tested on a fully loaded connector;
current for temperature increase of 40°C

Contact Resistance:
0.635mm terminals: 8 milliohms max.
1.50mm terminals: 4 milliohms max.
Dielectric Withstanding Voltage:
1000V AC for 1 minute
Insulation Resistance: 100 Megohms min.

Physical

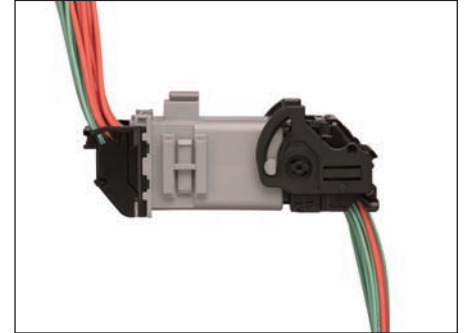
Housing: PBT, Glass-filled
Lead-Free: Yes
Operating Temperature: -40 to +125°C

Sealing

IP6K7, IP6K8, IP6K9K

CMC Wire-to-Wire Hybrid Connection System

501820 32-Circuit Header
501826 32-Circuit Wire Cap Straight
98649 32-Circuit Wire Cap Left/Right
501827 0.60mm Male Terminal
501828 1.50mm Male Terminal



ORDERING INFORMATION

Male Connector

Order No.	Number of Circuits	Color Coding
501820-3201	32	Black

Wire Cap

Order No.	Wire Output	Housing Color
501826-3201	Straight	Black
98649-1003	Left or Right	

Terminals

Order No.	Terminal Width (mm)	Plating	Wire Size in mm ² *
501827-0101	0.63	Tin (Sn)	0.30 - 0.50
501828-0101	1.50		0.85
501828-0111			1.25 to 2.0