

CMC HYBRID CONNECTORS CIRCUIT SIZES: 24/32, 36/48



CMC Connectors 32 and 48-circuits



CP Terminals 0.6mm and 1.5mm

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Table of Revisions

Revision	Modification	Sheet	Date
A	First edition.	All	2013/04/05
В	Revised shelf life	38	2015/06/10
B1	Template update Updated recommendations, add bundle curvature recommendation and update of traceability	All 10, 29, 41	See title block

Pictures in this document are for reference. Component details may change since this document has been written.

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APPLICATION SPECIFICATION

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1. PRESENTATION

1.1. Product Introduction

CMC Connectors are wire-to-board connection systems.

Key features of CMC connectors are:

- Sealed High performing matte seal and single wire seal
- > High-density
 Fine pitch size for compact PCB design
- Hybrid 2 different terminal sizes used CP 0.6 and CP 1.5mm
- Modular Different numbers of circuit sizes, color coding and 2 wire output orientations are available

CMC Connectors are to be used with Molex CP Terminals CP 0.6mm and CP 1.5mm.

Connectors	24 ckt	32 ckt	36 ckt	48 ckt	
0.6 mm CP (pcs)	18	24	30	40	
1.5 mm CP (pcs)	6	8	6	8	
Existing colors coding	Blk, Gry	Blk, Gry, Brn Blu, Grn	Blk, Brn	Blk, Gry, Brn, Grn	
Product Series	Yes	Yes	Yes	Yes	
Connector interface					

1.2. CMC Connector interfaces in Standard Version

1.3. Overview



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CMC Application examples 1.4.

- Engine control unit
- > Automatic gear box
- Suspension controller
- Parking brake
 Fuse box
- Electric doors



View of a Diesel Engine 32-circuit CMC + 48-circuit CMC + 32-circuit CMC for Engine Management





32-circuit CMC for Hydraulic and Electronic Suspension Controller



Figure 1-2: Examples of applications

			1								
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2. CONNECTOR ASSEMBLY PROCESS

2.1. **Terminal Crimping**

Hand Crimp Tool parts numbers:

CP 0.6										
IS	0	T.	XL							
0.35 mm ²	63811-9100	AWG 22	63811-9100							
0.5 to 0.75 mm ²	63811-9200	AWG 20/18*	63811-9200							
		CI	P 1.5							
IS	0	Т	XL							
0.5 to 0.75 mm ²	63811-8900	AWG 18	63811-8900							
1 to 2 mm ²	63811-9000	AWG 16/14	63811-9000							

▶ *The CP 0.6 terminal, with 18 TXL wire is limited to a maximum diameter of 2.06mm, meeting the requirement of Ford specification FSB-M1L123-A.

Applicator part number

CP 0.6										
IS	0	T.	XL							
0.35 mm ²	63902-1900	AWG 22	63902-1900							
0.5 to 0.75 mm ²	63902-2000	AWG 20/18*	63902-2000							
	CP 1.5									
IS	0	Т	XL							
0.5 to 0.75 mm ²	63868-8000	AWG 18	63868-8000							
1 to 2 mm ²	63868-8100	AWG 16/14	63868-8100							

➤ *The CP 0.6 terminal, with 18 TXL wire is limited to a maximum diameter of 2.06mm. meeting the requirement of Ford specification FSB-M1L123-A.

Note: Please refer to Molex Crimp Specifications for Crimp Heights.

To order please contact your Molex Sales Representative or check www.molex.com

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2.2. Recommendation for Harness Maker Plant



- Place arrows of cardboard box oriented to the top:
- Open packaging with a sharp less tool.
- Do unpack the products only when you use them for assembly (dust...).
- > Do not change the position lever during assembly (delivery position).
- Cabling process must not damage the interfacial seal.
- > The connector should not receive shock during the whole process.
- > Do not contaminate the peripheral seal during the whole process.
- Avoid contact of the housing with lubricants, solvents or other product which might deteriorate the seals. In case of pollution with such material, the connector must be changed.
- > TPA must be closed when handing the harness.
- Use only Molex recommended tool.

2.3. Recommendation for Final Assembly Plant

- > Do not change the position lever during the assembly process.
- > The connector should not receive shock during the whole process.
- > Modify the lever position only on the header.
- > Do not touch nor damage the perimeter seal during any process.
- > Do not contaminate the peripheral seal during the whole process.
- Avoid contact of the housing with lubricants, solvents or other product which might deteriorate the seals. In case of pollution with such material, the connector must be changed.



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2.4. Connector Loading

2.4.1 Cavity number for terminal insertion



2.4.2 Wire Length

Wire length (+/- 0.5 mm) inside the connector:

- > CP 0.6 crimped on 0.5mm² wire
- > CP 1.5 crimped on 1.5mm² wire



For letter "D":

Row	А	В	С	D	Е	F	G	Н	J	K	L	М
48w	49	51	53	55	57	59	61	63	65	68	75	80
32w	50	52	54	56	58	60	63	65	-	-	-	-

For letter "G":

Row	А	В	С	D	Е	F	G	Н	J	K	L	М
48w	76	74	72	69	66	63	61	59	56	54	48	43
32w	63	61	58	56	54	52	51	47	-	-	-	-

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Step1: Seal Plug Assembly 2.5.

Plugs should be inserted before terminals





Insert the 0.6 and 1.5 seal plugs in the rear cover until it stops



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Note:

- Do not use connectors with empty cavities.
- All cavities need to have either a CP Terminal or a seal plug inserted.
- If seal plugs are not used, the connector is NOT SEALED.









Note: Seal plug is mandatory on each assembled connector.

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2.7. Step 3: Terminal Insertion

Terminal loading sequence recommendation, TXL wires only:

32 way	Α	В	С	D	E	F	G	Н
1	7	6	5	1	23	24	25	26
2	12	11	10	2	18	19	27	28
3	17	16	15	3	13	14	29	30
4	22	21	20	4	8	9	31	32

48 way	Α	В	C	D	Ε	F	G	Н	J	K	L	Μ
1	9	8	7	6	5	1	37	38	39	40	41	42
2	18	17	16	15	14	2	28	29	30	31	43	44
3	27	26	25	24	23	3	19	20	21	22	45	46
4	36	35	34	33	32	4	10	11	12	13	47	48

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Note for CP0.6 and 1.5: In case of rotation, do not remove the wire! Check the position of the insulation between the insulation crimp and the conductor crimp. If the insulation is perpendicular to the letter, insertion is possible; if <u>not</u>, turn over slowly.

ΟΚ

NO



2.7.1 Twisted wires



Insert completely one wire:

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Choose the better orientation considering the second wire

or



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Insert completely the second wire:





2.7.2 Splicing Cables

Minimum distance between splice and terminal: 250mm



Do not rotate the terminal at any point during insertion, otherwise damaging the terminal or the matt seal is possible.

			250 mm mini		
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2.8. Step 4: Closing the TPA (Secondary lock)



TPA must be in-line with the connector

Note: Secondary lock must be closed when handling the harness during the final assembly.

TPA detects badly seated terminals.

If the force is high, please check all terminals are well seated.

TPA seating is stopped by badly seated terminal.

Closed TPA

Force to close: 40 N MAX

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2.8.1 Troubleshooting

When the TPA closing force is high and/or the TPA is stopped before its final position:







Process:

- > Identify the area where terminal is badly seated,
- \succ Open the TPA,
- > Check in the identified area any badly seated terminal,
- > Re-check by "Push Clic Pull" Do not rotate the terminal,
- \succ Close the TPA.

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Step 5: Installing the Wire Cap (or Wire Dress Cover) 2.9.

Dress the wires to fit the wire cap (opposite the lever)

- > #1: Install wire dress cover on the lever side
- > #2: Slide the wire dress cover until it locks position





Wire Dress Cover in its final locked position

Note: Wire Dress Cover is mandatory on each assembled connector.





Locking lever on top of the Wire Dress Cover

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Tie-Wrap Consideration 2.10.

Tie-wrap to use have to comply with the following dimensions:



Note: Tie-wrap is mandatory on each assembled connector.

2.10.1 Tie-Wrap Matrix, example

Select the Tie-Wrap position according the quantity of wires:









2.11. Step 6: Tie-Wrap Installation







2.12. Step 7: Wire Dressing



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2.13. Step 8: Closing the Tie-Wrap

Position 1



Final Tie-Wrap position:







Note:

- Check that the Wire Dress Cover (Wire Cap) as the Wires are not damaged by the Tie-Wrap.
- Check that the head of the Tie-Wrap is in the correct position and allow the Cam Lever to lock on the Wire Dress Cover (Wire Cap).

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NO



Tie-Wrap not in a correct position

OK





Tie-Wrap not in a correct position





R Min

Minimal curvature radius should be minimum 5x the bundle diameter. The considered radius to be measured at the inner edge of the bundle.

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2.15. Step 10: Wire Harness Testing

2.15.1 Harness Test Layout Definition

Please see Interface drawing.

2.15.2 Dimensions with closed TPA, for Electrical and Seal Counter Part





2.15.3 PoGo Pins For Test Fixing



2.15.4 Electrical Continuity Checking

Fixtures used for continuity testing must meet the row and the pitch dimensions, according the Interface drawing.

Fixtures outside these requirements could result in damage to the connector and/or terminals.

Probe pin recommendations:

- > When testing the connector for continuity it is mandatory to not damage the terminals.
- Pogo pins should be checked for damage or sticking several times a shift. This should assure containment, if an issue is found.
- > At first a visual inspection of all the pins for damage should be performed.
- Then a testing block should be used to depress all the pogo pins up into the barrel. If there is a bent or sticking pin, it should remain stuck in the barrel of the pogo pin. A damaged or stucked pin should be replaced before any additional testing is performed.

Probing damage can occur:

- If a sharp ended probe is inserted into the contact of the terminal, it may damage the plating and increase contact resistance.
- If an oversized diameter probe is inserted into the terminal, this will overstress the beam in the terminal. This will create an environment for intermittent connections, and increased contact resistance.
- If a probe is inserted into the connector on an angle or off center it may damage the terminal, and or the connector.

2.15.5 Connector Sealing Test

Test Cor	nditions
Pressure	250 ±50 mbar
Time	5 to 10s

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2.15.6 Manual Testing Electrical Continuity

Note:

If it's necessary to check the continuity after final electrical test or on the application, use ONLY a tool with PoGo pin (see above specification).



PoGo pin



To order please contact your Molex Sales Representative or check www.molex.com

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D1	EC No:	121896		AS	CMC 24/32 AND	36/48 CKT		22 -4 11
DI	DATE:	2017/12/20			MATTE SEAL VE	RSION		JZ 01 41
DOCUMENT	NUMBE	<u>R:</u>	DOC TYPE:	DOC PART:	CREATED / REVISED BY:	CHECKED BY:	APPROV	ED BY:
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					TEMPL	ATE FILENAME: APPLICATION	_SPEC[SIZE_A	\4](V.2).DOCX



MOLEX APPLICATION SPECIFICATION

3. CONNECTOR REWORK OPERATIONS

3.1. Step 1: Removal of the Wire Dress Cover



3.2. Step 2: Opening the TPA (Secondary Lock)



With a small screw-driver, lift the TPA to move it until its pre-lock position









MOLEX APPLICATION SPECIFICATION

Step 2: Insert the tool

Terminal Removal Process 3.3.3

Terminal removal holes

Terminal removal process

Step 3: Remove the wire without rotating

the terminal nor the wire

Step 1: Push the wire





Rework tool cavities (If needed, turn 90° to match with above picture)

Note:

Do not rotate the terminal at any point during terminal servicing, otherwise damage to • the matte seal or to the terminal is possible.

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ОК







OK

Note:

- Insert the tool finger as mentioned above until the tool stops.
- The handle is not in contact with the plastic. DO NOT OVER PUSH.
- Keep it perfectly in the axis of the terminal.

After rework, see chapter 2, to correctly insert the terminal and finish the harness.

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4. ASSEMBLY OPERATIONS TO THE HEADER









No Specific Sequence









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molex

APPLICATION SPECIFICATION

Note:

• For the same header, 2 orientations are possible, DEPENDING ON CONNECTOR CHOICE: "G" or "D" wire output direction:



4.1. Mating Operations

4.1.1 Step 1: Insert the Connector Till It Stops In the Header



4.1.2 Step 2: Rotate the Lever



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4.1.3 Step 3: Lock the Lever on the Wire Dress Cover Until it Clicks





4.2. Un-mating Operations

4.2.1 Step 1: Press on the Latch on Top of the Wire Dress Cover, and Rotate the Lever





4.2.2 Step 2: Rotate the Lever



4.2.3 Step 3: Final Un-Mate Connector Position



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5. STORAGE CONDITIONS

- 5.1. Applicable to all components without seal plug and single wire seal
 - Temperature range: 40°C up to + 85°C
 - Duration: 18 months maximum

Production date traceability:



Production date

- 2 first digit: year
- 3 last digit: day of the year

Note: Do not use cutting tool to open the original package!

The connectors must be stored in their original package.

Store reels in a dry and clean area. Do not store reels in a damp or dusty area. The reels should be protected from direct sunlight.

During storage and handling, no charge must damage original package.

In the event of repacking at the wiring station, use only clean plastic box (metal box prohibited), this repacking must be carried out by batch where the number of connectors is less than or equal to that mentioned on the delivery boxes.

The connectors and terminals are to be stored so that no shock can deteriorate their mechanical and electrical functions.

After harness assembly, connector does not need specific protection. The harness maker must guarantee an appropriate protection regarding storage, transport and/or using conditions.

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