

FXP CONNECTOR SERIES

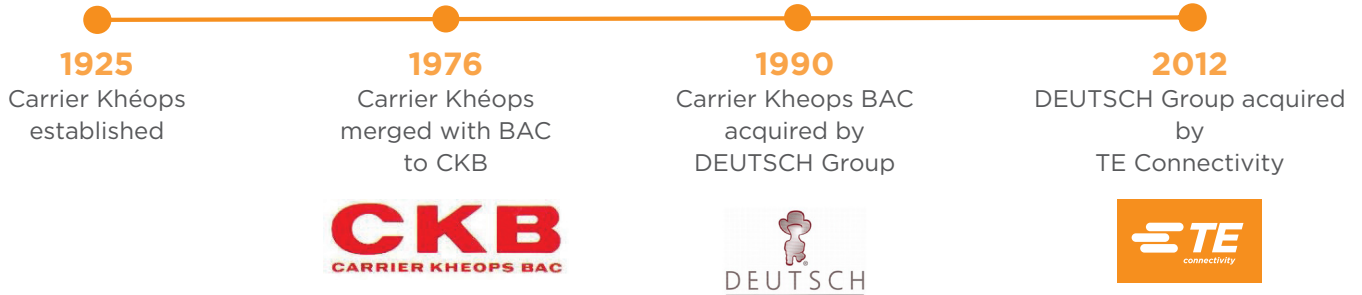
Rugged power connectors for all mission critical power applications on rolling stock, meeting EN 50467 including requirements for fire and smoke compliance per EN 45545-2. Allowing multiple combinations with just ten variants this connector series saves weight, space and contains more electrical capacity up to 650 amps, 4000 volt.

- Traction Motor Systems
- Inter-vehicle Applications
- Converters/Electrical box Outlets
- Permanent Magnet Motor Applications
- Underframe/Roof Applications
- Train Line Power Applications
- Auxiliary Power Supply

FXP CONNECTOR SERIES

TE CONNECTIVITY - ALMOST 100 YEARS OF EXPERIENCE AND HISTORY IN THE RAIL INDUSTRY

Founded in 1925 the Carrier Khéops product range continues to be utilized on the latest generation of trains. CKB (merged from Carrier Khéops and BAC in 1976) was acquired by the Deutsch Group in 1990 and the product range went from strength to strength. Most recently, the expertise and innovation of the Rail team found a home with TE Connectivity in 2012 and the development of a new range of power connectors for the market of today and the future.



The Railway market's trend on weight reduction, dimension restrictions and electrical increasing capacity is creating a strong demand for creative solutions. TE Connectivity has developed the FleXible Power (FXP) Rail Power Connector Series providing a lighter, smaller connector series with enhanced electrical capacity against prior generations.

The FXP Rail connector series supports all mission critical power applications on rolling stock and is designed according to and meeting the EN Rail connector standard EN 50467 which includes requirements for fire and smoke compliancy per EN 45545-2.

The FXP product family comes in two different sizes supporting applications up to 650 A, 4000 V, OV3-PD3. Components within the series have been reduced enabling faster assembling and a reduced number of parts to hold in stock.

For applications using a Permanent Magnet Motor (PMM) a partitioned variant is also available to support EMI issues that are often seen in this type of motor.

IMPORTANT FACTS

- The platform provides 24 (or 48 including reverse gender versions) possible configurations with just 10 connector variants, next to multiple contact sizes supporting a wide range of cable cross-sections from 50 up to 300 mm²
- Weight reduction of 47% comparing an FXP size 1 receptacle against previous generation
- Common components across the range to provide flexibility in design and production which saves assembly time, lower lifecycle and operating costs (LCC)
- Partitioned version provides effective EMI protection when used with permanent magnet motor (PMM) configurations

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DIMENSIONS

Shell size	1		2	
Contact diameter [mm]	Ø 8	Ø 12		Ø 20
Crimp contact Maximum cable size	50 mm ²	120 mm ²		300 mm ² **
Screw contact thread	M8 – M10		M10 – M12 – M14	
Current contact (max. @ 20°C ambient, Δ50K) *	220 A	350 A		650 A
Number of poles (max.)	4	3	4	3
Service voltage (EN50124-1/A2)	3000V (OV3-PD3) 4000V (OV2-PD2)		4000V (OV3-PD3)	
Test voltage	>12000 V			

*other ratings available on request

**derivation only, otherwise 240 mm²

ENVIRONMENTAL

- Protection index: IP66 & IP68 (5m)
- Service temperature: -55°C/+100°C
- Salt spray resistance: 500 hours
- Fluids: hydrochloric acid, sodium hydroxide, IRM 902 oil
- RoHS compliant
- Halogen free

MECHANICAL

- Mating cycles: 500
- Shock & vibration: EN 61373 up to category 2
- Keying: Primary + 6 variable key positions
- Fixating brackets for plug available
- Matching cable glands, reducers and caps available

MATERIAL

- Shell: aluminum, chemically conversion treatment with black paint finish
- Insert: thermoplastic (CTI >= 600 V)
- Contacts: copper, silver plated
- Dummy contact: plastic
- Fire and smoke: EN 45545-2, HL3 (R22/R23) NFPA130 (for insert)

COMPLIANCE

- Rail connector standard: EN 50467

PRODUCT SPECIFICATIONS

- size 1: 108-157004 (straight & bulkhead)
- size 2: 108-157009 (straight)/108-157008 (bulkhead & 90° elbow)

FXP CONNECTOR SERIES

FXP SERIES COMPONENTS

Straight/in-line*: Most common and straightforward connection

[PS] Plug straight

[RS] Receptacle Straight

[PP] Plug Partitioned

[RP] Receptacle Partitioned

Wall*: Two different solutions when feeding cables through a wall or box, either for cabling straight out the rear of the connector using crimp contacts or right-angle in any direction using screw type contacts

[WC] Wall/bulkhead receptacle: Crimp contact

[WS] Wall/Bulkhead receptacle: Screw contact

Angled: When space does not allow a straight connection the 90° angled connector can be the solution in combination with a receptacle straight [PS] or any of the wall connectors [WC/WS]

[PA] Plug 90° elbow/Angled

Junction: To save space by reducing the amount of cables from 6 to 3 the derivation box is a suitable solution to accept 2 straight or angled plugs.

[RD] Derivation (junction) Receptacle

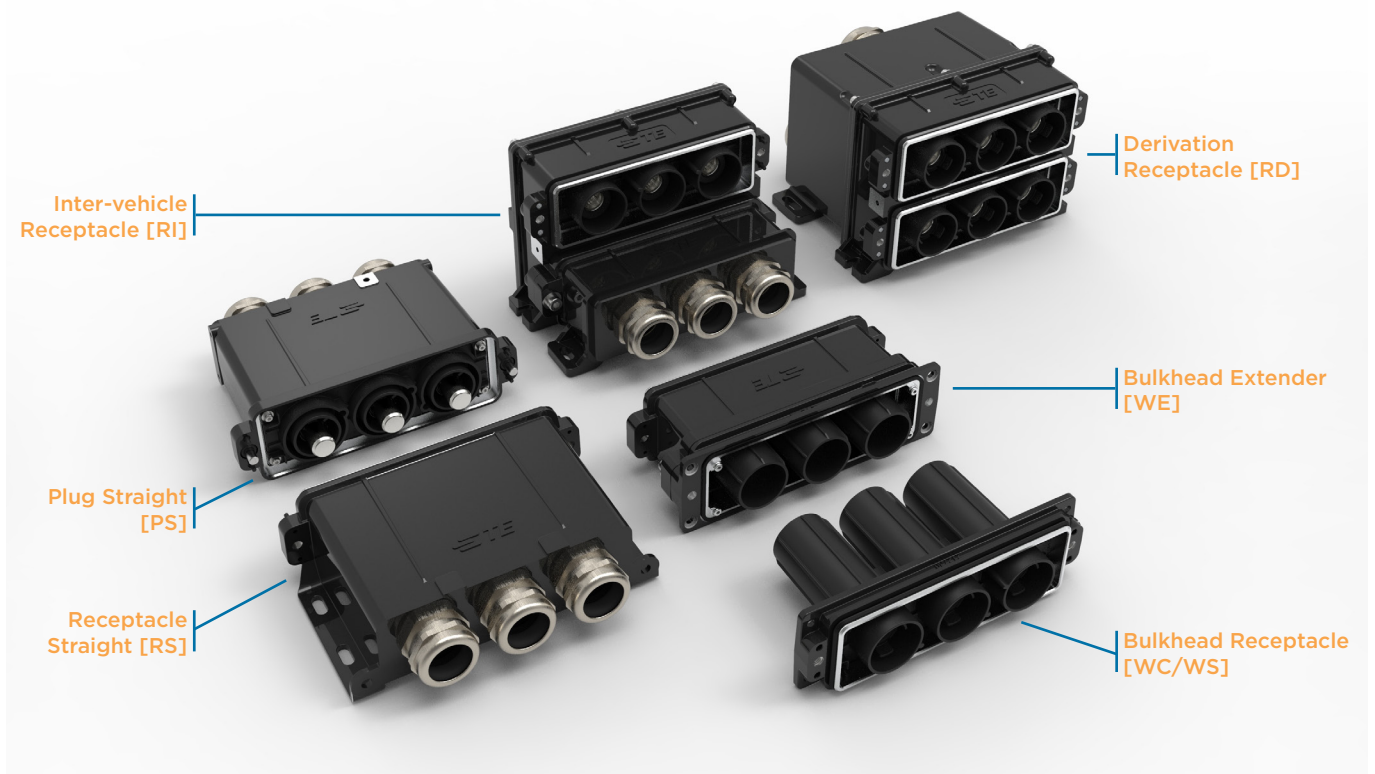
Inter-vehicle: In case a wall solution is not preferred between 2 cars this box can be selected instead, keeping all the connections on the outside allowing a jumper with straight plugs to be connected on either side.

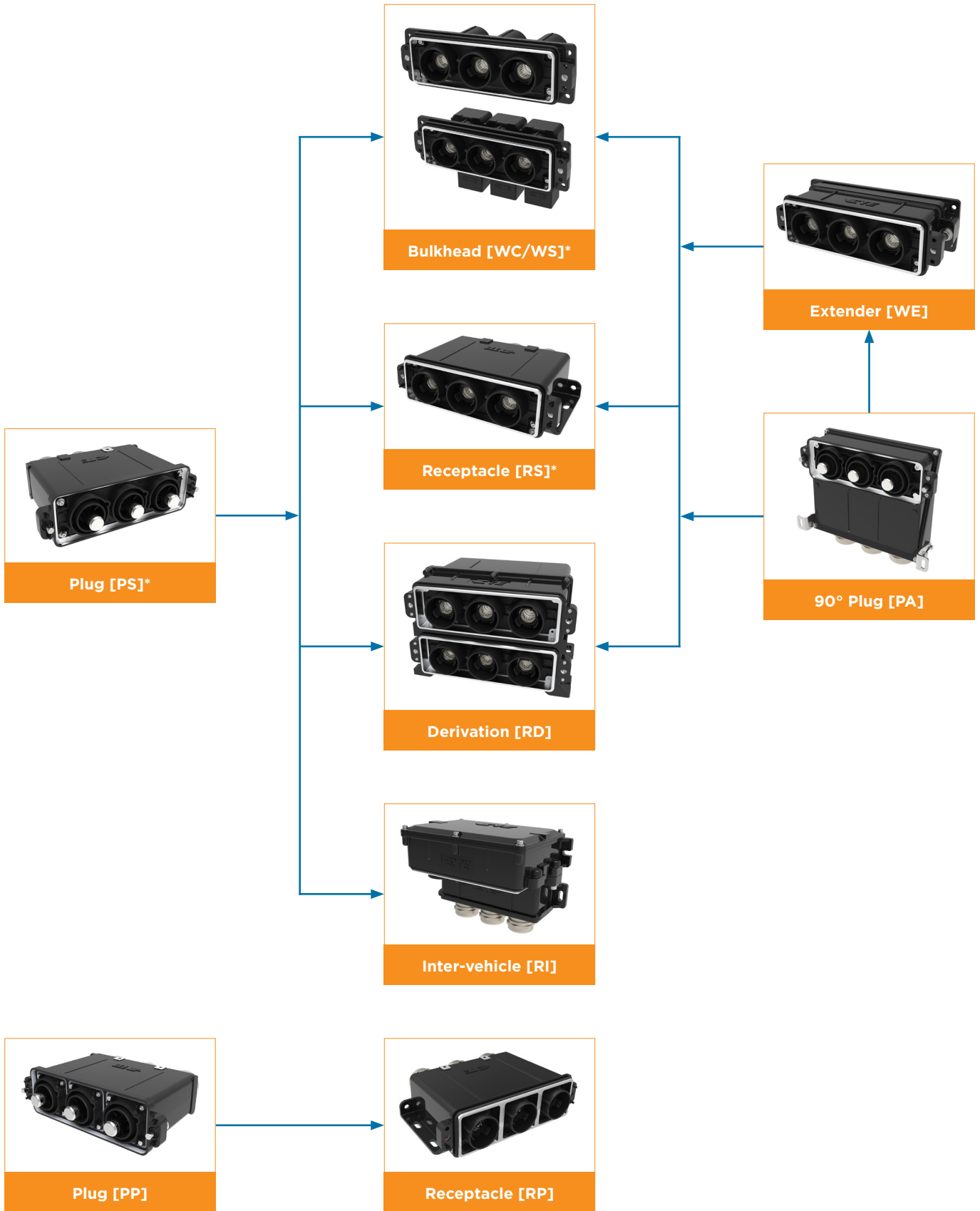
[RI] Inter-vehicle Receptacle box

Extender: This is special module that can be used to extend the length of a connection allowing different configurations that are by default not possible due to space constraints. For instance, it will allow 2 angled plugs to be put over each other allowing all cabling to go in the same direction.

[WE] (Wall) Extender

*the gender can also be reversed. Default: plug = male and receptacle = female.





*Reverse gender is possible

FXP CONNECTOR SERIES

PART NUMBER CONNECTORS

FXP	2	WC	-	3	M40	-	S
Size shell							
1 - 2							
Shell type							
WS: Wall receptacle Screw contact							
WC: Wall receptacle Crimp contact							
RS: Receptacle							
PS: Plug							
PA: Angled 90° plug							
RD: Derivation receptacle							
RI: Inter-vehicle receptacle (only size 2)							
WE: Extender							
PP: Partitioned Plug							
RP: Partitioned Receptacle							
Number of outlets							
3 - 4							
Outlet size							
M25 - M32 - M40							
Insert type :							
P: Male/Pin							
S: Female/Socket							

Note: Not all combinations are possible due to space or design constraints. Consult with TE when uncertain about the configuration.

PART NUMBER CONTACTS

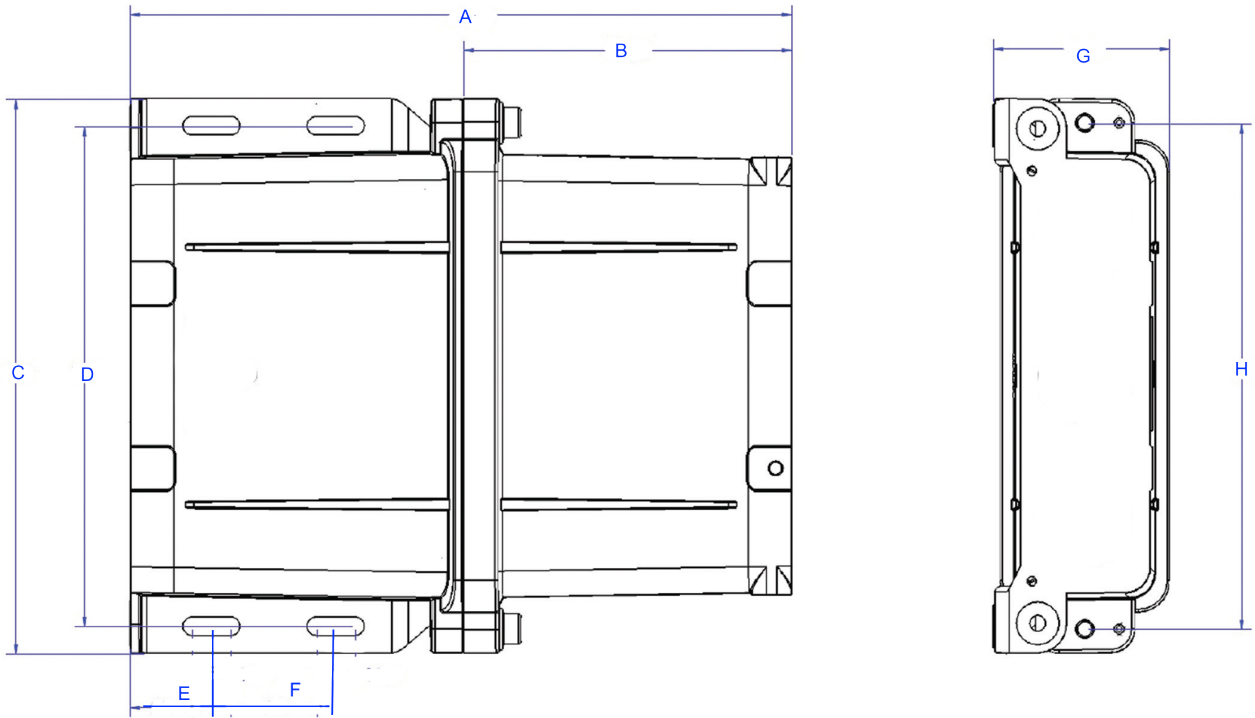
FXP	-	C	S	20	-	M	240	P	-	CU
Type :										
S: Straight										
A: Angled										
D: Derivation										
I: Inter-vehicle										
Diameter [mm]										
8 - 12 - 20										
Termination type :										
M: Standard Metric Crimping										
L: Screw/Lug										
D: Dummy										
Section/Screw dimension :										
M8 - M10 - M12 - M14: Screw [thread size]										
50 - 70 - 90 - 120 - 150 - 185 - 240 - 300*: Cable [mm ²]										
X: Not applicable										
...										
Type :										
P: Male/Pin										
S: Female/Socket										
CU: Copper contact										

*only applicable for the derivation receptacle

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DIMENSIONS

Plug/Receptacle straight



For other variants see respective drawings

	A	B	C	D	E	F	G	H
Size 1	231	115	194	175	29	44	62	177
Size 2	287	142	248	226	44	56	78	229

Dimensions in mm

ACCESSORIES/SPARES

	Size 1	Size 2
Fixing bracket	FXP-BS1	FXP-BS2
Front seal receptacle	FXP-GR2	FXP-GR2

For matching cable glands and caps, please consult with TE

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TOOLS

For more information on tooling required for this connector platform, see the applicable application specification or details on the component drawing.

SAFETY INSTRUCTIONS

- Ensure cables and contacts withstand the electrical and environmental characteristics of your application
- Always use tools recommended in this catalog or on the assembly drawings
- Check connector assembly and wiring before switching power on
- It is recommended that the termination of all electrical equipment be undertaken only by suitably trained and qualified personnel
- To ensure the safe and efficient operation of connectors, the relevant operations manual must be followed, please consult us
- Do not disconnect under voltage
- In doubt, please contact us.

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