



Q17003

# STRAIGHT VERSION + BULKHEAD RECEPTACLE VALIDATION PLAN ACCORDING TO EN 50467 FXP1

PRJ-16-000907077

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# Validation / Qualification Test Report



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# 1 INTRODUCTION

## 1.1 AIM OF THE TESTS

The aim of the type tests is to qualify the connector FXP1 according to the standard EN50467. The FXP series is designed to fulfil the standard EN50467 and consequently section 7 of this standard which defined the type tests, specimens, sequence, ratings and measurements to be performed by the product in tests.

Unless otherwise specified, severity of the service conditions shall be those per EN50467, table B.1, for on board rolling stock locations 4-5-6. Testing AC voltage frequency is 50Hz.

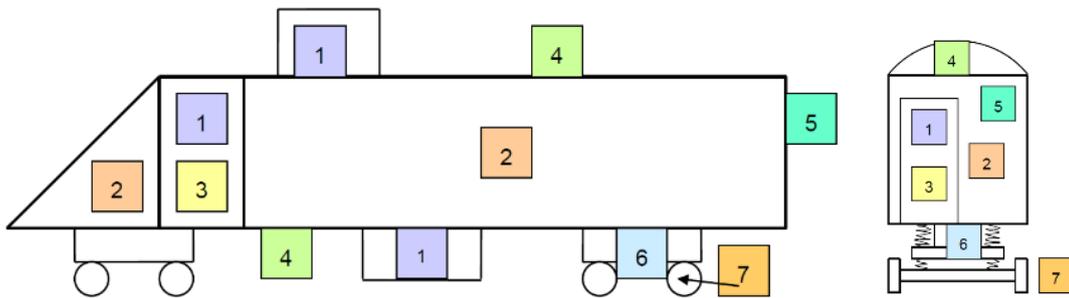


Figure 1 – Typical connector locations on board rolling stock (EN50467, fig. 3)



## 1.2 APPLICABLE DOCUMENTS

### 1.2.1 TE Connectivity documents

#### Connectors:

- 211443\_DEUTSCH - FXP1 straight receptacle, 3xM32 outlets, female insulator
- 211444\_DEUTSCH - FXP1 straight plug, 3xM32 outlets, male insulator
- 211440\_DEUTSCH - FXP1 Bulkhead receptacle, for contacts to be crimped, female insulator
- 108-157004 – FXP1 Series bulkhead and straight connectors validation plan according to EN50467
- 114-157005 - Implementation & wiring procedure FXP1 range
- 502-157069 - Current-temperature derating and breakdown voltage

#### Contacts:

- 211447\_DEUTSCH – FXP series Female contacts caliber 12 to be crimped
- 211446\_DEUTSCH – FXP series Male contacts caliber 12 to be crimped

#### Other / Download documents:

- <http://www.te.com/>

### 1.2.2 Normative documents

The following referenced standards are applicable, as well as the standards listed therein as applicable standards. For undated references, the last standard version in effect at the test date has been used.

- EN 45545-2+A1:2016 – Railway applications – Fire protection on railway vehicles – Part 2: Requirements for fire behavior of materials and components
- EN 50467:2012 - Railway applications – Rolling stock – Electrical connectors, requirements and test methods
- EN 50124-1/A2:2005 - Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment
- EN 60068-1:2014 - Environmental testing – part 1: general guidance
- EN 60068-2-1:2007 - Environmental testing – Part 2-1: Tests – Test A: Cold
- EN 60068-2-2:2007 - Environmental testing – Part 2-2: Tests – Test B: Dry heat
- EN 60068-2-11:1999 - Environmental testing – Part 2: Tests – Test Ka: Salt mist
- EN 60512-1:2001 - Connectors for electronic equipment – Tests and measurements – Part 1: General
- EN 60512-1-1:2002 - Connectors for electronic equipment – Tests and measurements – Part 1-1: General examination – Test 1a: Visual examination
- EN 60512-1-2:2002 - Connectors for electronic equipment – Tests and measurements – Part 1-2: General examination – Test 1b: Examination of dimension and mass
- EN 60512-2-1:2002 - Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2a: Contact resistance – Millivolt level method
- EN 60512-2-2:2003 - Connectors for electronic equipment – Tests and measurements – Part 2-1: Electrical continuity and contact resistance tests – Test 2b: Contact resistance – Specified test current method

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- EN 60512-2-5:2003 - Connectors for electronic equipment – Tests and measurements – Part 2-5: Electrical continuity and contact resistance tests – Test 2e: Contact disturbance
  - EN 60512-3-1:2002 – Connectors for electronic equipment – Tests and measurements – Part 3-1: Insulation tests – Test 3a: Insulation resistance
  - EN 60512-4-1:2003 - Connectors for electronic equipment – Tests and measurements – Part 4-1: Voltage stress tests – Test 4a: Voltage proof
  - EN 60512-5-1:2002 – Connectors for electronic equipment – Tests and measurements – Part 5-1: Current-carrying capacity tests – Test 5a: Temperature rise
  - EN 60512-7-2:2012 - Connectors for electronic equipment – Tests and measurements – Part 7-2: Impact tests (free connectors) – Test 7b: Mechanical strength impact
  - EN 60512-9-1:2010 - Connectors for electronic equipment – Tests and measurements – Part 9-1: Endurance tests – Test 9a: Mechanical operation
  - EN 60512-11-6:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-6: Climatic tests – Test 11f: Corrosion, salt mist
  - EN 60512-11-9:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-9: Climatic tests – Test 11i: Dry heat
  - EN 60512-11-10:2002 - Connectors for electronic equipment – Tests and measurements – Part 11-10: Climatic tests – Test 11j: Cold
  - EN 60512-13-1:2006 - Connectors for electronic equipment – Tests and measurements – Part 13-1: Mechanical operation tests – Test 13a: Engaging and separating force
  - EN 60512-13-5:2006 - Connectors for electronic equipment – Tests and measurements – Part 13-5: Mechanical operation tests – Test 13e: Polarizing and keying method
  - EN 60512-15-1:2008 - Connectors for electronic equipment – Tests and measurements – Part 15-1: Connector tests (mechanical) – Test 15a: Contact retention in insert
  - EN 60512-15-2:2008 - Connectors for electronic equipment – Tests and measurements – Part 15-2: Connector tests (mechanical) – Test 15b: Insert retention in housing (axial)
  - NFF 00-363:1995 – Rolling stock – Products to be crimped for electrical connections
  - EN 60529:1991+A1:2000 – Degree of protection procured by enclosures (IP code)
  - EN 61373:1999 – Railway applications – Rolling stock equipment – Shock and vibrations tests
  - ISO 1431-1:2004 – Rubber, vulcanized or thermoplastic – Resistance to ozone cracking – Part 1: Static and dynamic strain testing
- Assembly drawings ([see appendix 1](#)):
- 211443\_DEUTSCH: FXP1 straight receptacle, 3xM32 outlets, female insulator
  - 211444\_DEUTSCH: FXP1 straight plug, 3xM32 outlets, male insulator
  - 211440\_DEUTSCH: FXP1 bulkhead receptacle, for contacts to be crimped, female insulator
  - 211447\_DEUTSCH: FXP1 series female contacts caliber 12 to be crimped
  - 211446\_DEUTSCH: FXP1 series male contacts caliber 12 to be crimped

### 1.3 SAMPLING

Sample No.	Reference	Quantity per sample	Description	Drawing
1 to 12	FXP1RS-3M32-S	1	STRAIGHT RECEPTACLE	211443_DEUTSCH
	FXP1PS-3M32-P	1	PLUG STRAIGHT	211444_DEUTSCH
	FXP-CS12-M120P-CU	3	MALE CONTACT	211446_DEUTSCH
	FXP-CS12-M120S-CU	3	FEMALE CONTACT	211447_DEUTSCH
	0401-0415AS	3	CABLE GLAND	/
B1 to B4	FXP1WC-3XXX-S	1	WALL RECEPTACLE STRAIGHT	211440_DEUTSCH
	FXP1PS-3M32-P	1	PLUG STRAIGHT	211444_DEUTSCH
	FXP-CS12-M120P-CU	3	MALE CONTACT	211446_DEUTSCH
	FXP-CS12-M120S-CU	3	FEMALE CONTACT	211447_DEUTSCH
	0401-0415AS	3	CABLE GLAND	/

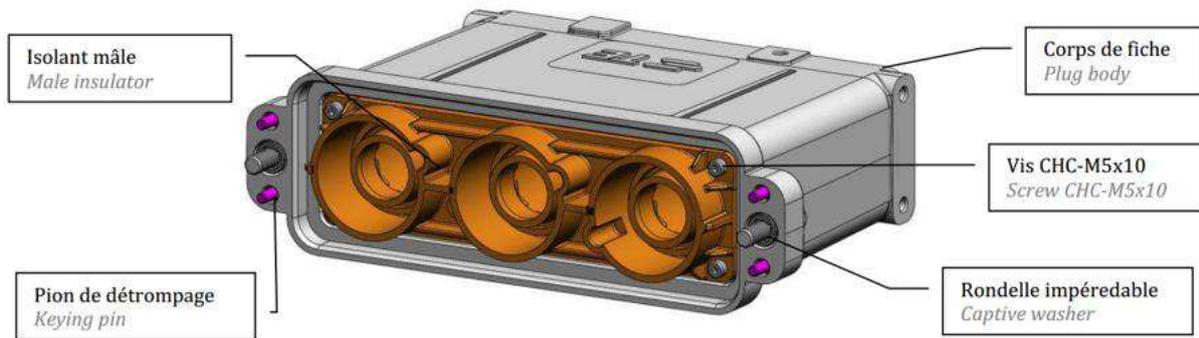
The connectors under test are shown below:

#### Straight receptacle size 1 for 3 cal12 contacts:

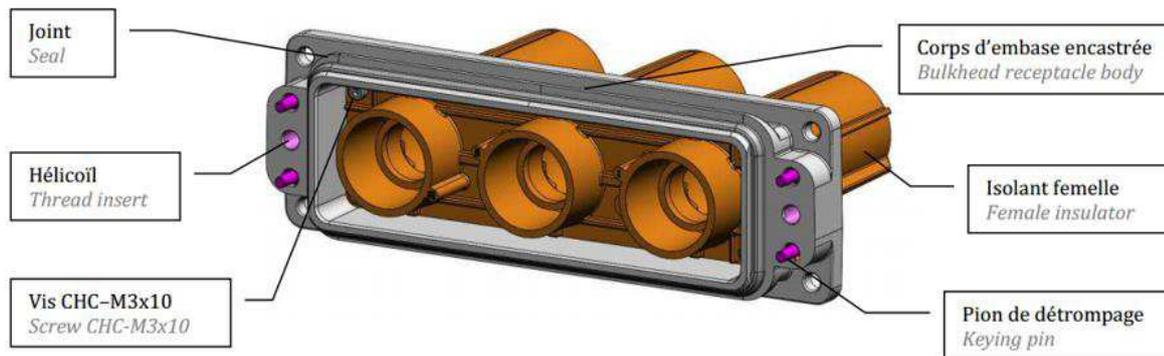




### Straight plug size 1 for 3 cal12 contacts:



### Bulkhead receptacle size 1 for 3 cal12 contacts:



This contact range, the FXP contacts caliber 12, is assembled in the insulators with a circlip, the link between the male and female contacts is done with a diabolo (spring lamellas technology). The cross section of termination chooses for the qualification is the big size (120mm<sup>2</sup>).





### 1.4 TESTS SEQUENCE

The samples are submitted to the tests in the table here-after:

Group		Test description	EN 60512	EN 50467	Sample number
0	01	Visual & dimensional examination	1a,1b		2 to 12 & B1 to B4
	02	Conformity of marking	1a		2 to 12 & B1 to B4
	03	Contact resistance	2b		1, 5, 7 to 12 & B1 to B3
	04	Insulation resistance	3a		1 to 12 & B1 to B3
	05	Dielectric strength	4a		1 to 12 & B1 to B3
A	A1	Visual & dimensional examination	1a, 1b		1
	A3	Polarization	13e, 1a		
	A6	Contact retention in insert	15a, 1a		
	A8	Mechanical strength impact	7b, 1a		
B	B1	Initial measurement	2b		2 to 4
	B2	Mechanical operation	9a, 1a	7.9	
	B3	Final measurement	2b, 4a	7.12	
C	C1	Temperature rise	5a	7.8	5
D	D1	Initial measurement	2b		6
	D2	Cold	11j, 1a	6.18	
	D3	Dry heat	11i, 1a	6.18	
	D4	Salt mist test	11f, 1a	7.14	
	D5	Final measurement	2b		
	D6	Dielectric strength	4a	7.12	
E	E3	Degree of protection IP code		7.7	7, 8, B1 & B2
	E4	Dielectric strength	4a	7.12	
F	F1	Simulated long life random vibration at increased levels	2e, 1a	EN61373	9 & B3
	F2	Shock	1a	EN61373	
	F3	Random vibration test	2e, 1a	EN61373	
	F4	Dielectric strength	4a	7.12	
G	G1	Fluid resistance	19c		10 to 12
	G2	Engaging and separating force	13a		
	G3	Contact resistance	2b		
	G4	Insulation resistance	3a		
	G5	Dielectric strength	4a	7.12	10 to 12 & B4
	G6	Contact retention in insert	15a		
	G7	Insert retention in housing (axial)	15b		
	G8	Visual examination	1a		
		Fire behavior of materials and components		6.22	
		Resistance to ozone		6.24	

## 1.5 SAMPLES IMPLEMENTATION

For each test, except particular conditions:

- Preconditioning of the samples at least 24 hours, at  $(23 \pm 5)$  °C and at 45% to 75% of HR
- Samples are completely assembled according to manufacturer's specifications

Each sample for testing is composed of a pair of connectors: a plug and a receptacle, equipped of contacts and cable glands.



Products are prepared and wired according to the application specifications below:

- 114-157005: Implementation and wiring procedure of FXP1 range

The cable and crimping tools used are:

Cable section	Cable designation	CRIMPING TOOL			
		Pump	Cylinders	Flexible	Dies
120 mm <sup>2</sup>	HUBER+SUHNER RADOX EN 50264-3-1 3600V 1X120MM 12586169-1772421 31-2017	PA133K	SU210K	F4622K	TN 120V20

## 1.6 SAMPLES WORKING ORDERS

WO No.	DESCRIPTION	CATALOGUE No.
200215574474	CONTACT MALE CAL. 12, 120MM2, S/A	FXP-CS12-M120P-CU
200215574475	CONTACT FEMALE CAL. 12, 120MM2, S/A	FXP-CS12-M120S-CU
200217220102	RECEPTACLE STRAIGHT 3X CAL 12 SIZE 1	FXP1RS-3M32-S
200217424812	WALL RECEPTACLE STRAIGHT 3X CAL 12 SIZE 1	FXP1WC-3XXX-S
200217441848	PLUG STRAIGHT 3X CAL 12 SIZE 1	FXP1PS-3M32-P



## 1.7 TESTS DEVICES

Description	TE No.	Calibration dates	
		Current	Next
Caliper MITUTOYO	6131	2017/10	2018/10
Caliper MITUTOYO	2401	2018/03	2019/03
Buffer P/NP M32x1.5 – 6H	7324	2016/12	2018/12
Scale PCM BE6001	6689	2018/01	2019/01
Ohmmeter MEGGER DLRO600	6701	2018/03	2019/03
Insulation tester MEGGER BM25	2231	2017/11	2018/11
Traction / compression machine ADAMEL LHOMARGY DY36	1118	2017/04	2019/04
Dielectric strength tester SEFELEC PR 12 PF	1589	2018/05	2019/05
Comparator Mitutoyo	6626	2018/06	2019/06
Dynamometric key FACOM	7604	2017/11	2019/11
Datalogger AGILENT 34970A	1868	2018/05	2019/05
Current generator ZENONE model GI2000GL	7054	2018/05	2019/05
AC current probe CHAUVIN ARNOUX MA100	7570	2018/05	2019/05
Climatic chamber CLIMATS 320H60-1-5	1574	2018/05	2019/05
Climatic chamber FRANCE ETUVES XU250	6019	2018/05	2019/05
Salt spray chamber DYCOMETAL type SSC-400	7574	2018/05	2019/05
Digital torquemeter GEORGE RENAULT CD4005	1914	2018/04	2020/04
Flowmeter PUISI/COGETIL	7365	2017/05	2019/05
Micro-cuts detection device	7344-0001-03-001	2017/01	2019/01
Driver station	7161-0001-05-002	2017/11	2018/11
Sensor signal conditioner model 488C series	7161-0001-26-001	2016/12	2018/12
Accelerometer	7161-0001-28-001	2017/10	2018/10
Thermostatic bath PRECISTERM	/	/	/
Thermometer HANNA	6831	2017/10	2018/10

## 2 CONCLUSION

General, Group 0 (non-normative)					Sample No.																	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance	
01	Visual and dimensional examination	EN60512-1-1 EN60512-1-2	Customer drawing	Dimension shall comply with the drawings		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
02	Conformity of marking	EN50467-6.2	Customer drawing	Supplier's name, manufacture date, sample reference and contact locating numbers		✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓
03	Contact resistance	EN60512-2-2	400 A	CR ≤ 0.15 mΩ	✓				✓		✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
04	Insulation resistance	EN60512-3-1	1000 V DC 60 s	IR ≥ 5 000 MΩ	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	
05	Dielectric strength	EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓		✓	

Mechanical tests, Group A (per EN 50467, tab. 5)					Sample No.																	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance	
A1	Visual and dimensional examination	EN60512-1-1 EN60512-1-2	Customer drawing	Dimension shall comply with the drawings	✓																	✓
A3	Polarization	EN60512-13-5	360 N	No damage likely to impair function	✓																	✓
A6	Contact retention in insert	EN60512-15-1	130 N / 10 s	No axial displacement likely to impair normal operation	✓																	✓
A8	Mechanical strength impact	EN 60512-7-2	Dropping Height: 500 mm	Parts used for protection against electric shock shall not be damaged. Reduction of clearance and creepage distances is not allowed	✓																	✓

Service Life Tests, Group B (per EN 50467, tab. 6)					Sample No.																	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance	
B1	Initial measurement	EN60512-2-2	400 A	CR initial, reference value		✓	✓	✓														✓
B2	Mechanical operation	EN60512-9-1	500 cycles	No damage shall occur which could impair normal use		✓	✓	✓														✓
B3	Final measurement	EN60512-2-2 EN60512-4-1	400 A 12 kV / AC 50 Hz	≤ CR initial + 50% No breakdown nor flashover		✓	✓	✓														✓

Thermal Tests, Group C (per EN 50467, tab. 7)					Sample No.																	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance	
C1	Temperature rise	EN60512-5-1 EN50467-7.8	50K 60K 100°C	The upper limiting temperature specified shall not be exceeded					346 A 377 A 405 A													✓

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Climatic Tests, Group D (per EN 50467, tab. 8)					Sample No.																
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance
D1	Initial measurement	EN60512-2-2	400 A	CR initial, reference value						✓											✓
D2	Cold	EN60512-11-10 EN50467-6.18	-55°C / 2 h	No damage shall occur which could impair normal use						✓											✓
D3	Dry heat	EN60512-11-9 EN50467-6.18	+100°C / 168 h	No damage shall occur which could impair normal use						✓											✓
D4	Salt mist test	EN60512-11-6 EN50467-7.14	500 h	No damage shall occur which could impair normal use						✓											✓
D5	Final measurement	EN60512-2-2	400 A	≤ CR initial + 50%						✓											✓
D6	Dielectric strength	EN50467-7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover						✓											✓

Degree of Protection Tests, Group E (per EN 50467, tab. 9)					Sample No.																	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance	
E3	Degree of protection IP code	EN50467-7.7	Dust test	IP6X							✓	✓					✓	✓			✓	
			Water jet test	IPX6								✓	✓					✓	✓			
			Immersion 1m / 30min	IPX7								✓	✓					✓	✓			
			-0.5 bar / 30min	IPX8								✓	✓					✓	✓			
E4	Dielectric strength	EN50467-7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover							✓	✓					✓	✓			✓	

Vibrations and Shock Tests, Group F (per EN 50467, tab. 10)					Sample No.																
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4	Compliance
F1	Simulated long life random vibration at increased levels	EN61373: 1999, clause 9	Cat.2 ≤ 1 μs	Micro interruption ≤ 1 μs No damage likely to impair function									✓						✓		✓
F2	Shock	EN61373: 1999, clause 10	Cat.2	No damage likely to impair function									✓						✓		✓
F3	Random vibration test	EN61373: 1999, clause 8	Cat.2 ≤ 1 μs	Micro interruption ≤ 1 μs No damage likely to impair function									✓						✓		✓
F4	Dielectric strength	EN50467-7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover									✓						✓		✓

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Resistance of Fluids, Group G (per EN 50467, tab. 11)					Sample No.																Compliance	
Test	Test description	Standard	Test ratings	Requirements	1	2	3	4	5	6	7	8	9	10	11	12	B1	B2	B3	B4		
G1	Fluid resistance	EN60512-19-3	HCl: 23°C NaOH: 23°C IRM902 oil: 50°C Ageing: 65°C	No damage likely to impair function and maintain legible marking										✓	✓	✓						✓
G2	Engaging and separating force	EN60512-13-1	Insertion/extraction forces	No damage likely to impair function										✓	✓	✓						✓
G3	Contact resistance	EN60512-2-2	400 A	≤ CR initial + 50%										✓	✓	✓						✓
G4	Insulation resistance	EN60512-3-1	1000 V DC / 60 s	IR ≥ 500 MΩ										✓	✓	✓						✓
G5	Dielectric strength	EN50467-7.12 EN60512-4-1	12 kV / AC 50 Hz	No breakdown nor flashover										✓	✓	✓						✓
G6	Contact retention in insert	EN60512-15-1	200 N / 10 s	Axial displacement after the test ≤ 0.5 mm										✓	✓	✓						✓
G7	Insert retention in housing	EN60512-15-2	240 N / 1 min	No displacement or damage likely to impair function										✓	✓	✓					✓	✓
G8	Mated and unmated sample	EN60512-1-1	visual	No damage likely to impair function										✓	✓	✓					✓	✓

Tests on raw materials (per EN 50467, tab. 13)				Sample No.																Compliance
Test description	Standard	Test ratings	Requirements																	
Fire behaviour of materials and components	EN 45545-2	R22 / R23	HL2 mini	HL3																✓
Resistance to ozone	ISO 1431-1	Method B: 24h / 500 ppb / 40°C / elongation 20%	No cracks shall appear	✓																✓

- ✓ Test realized and compliant result
- ✗ Test realized and no compliant result

The FXP size 1 connector's, straight / bulkhead receptacle and straight plug versions, fully satisfy to the EN50467 requirements for on board rolling stock locations 4-5-6 (EN50467, table B.1).



### 3 APPENDICES

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211443_DEUTSCH: Size 1 female receptacle / 3 cal. 12 to be crimped 50-120 mm <sup>2</sup> / M32.....	15
211444_DEUTSCH: Size 1 male straight plug / 3 cal. 12 to be crimped 50-120 mm <sup>2</sup> / 3xM32 .....	16
211440_DEUTSCH: Size 1 female semi-recessed receptacle / 3 cal. 12 to be crimped.....	17
211447_DEUTSCH: S/A female contact caliber 12 to be crimped 50 to 120 mm <sup>2</sup> .....	18
211446_DEUTSCH: S/A male contact caliber 12 to be crimped 50 to 120 mm <sup>2</sup> .....	19



APPENDIX 1: Drawings

211443\_DEUTSCH: Size 1 female receptacle / 3 cal. 12 to be crimped 50-120 mm<sup>2</sup> / M32

**Tableau des caractéristiques / Characteristics table**

REPERES	FR	EN
Instructions de montage	Mounting instructions	114-157005-1
Normes de référence	Standard references	EN50467:2012
Matériau boîtier	Material shell	Aluminium
Matériau isolant	Insulating material	Black PU paint RoHS
Matériau isolant	Insulating material	Polyamide
Fiche technique contacts	Contact technical data	114-157005
Recouvrement des contacts	Contact overlap	See contacts
Calibre du contact	Contact gauge	See contacts
Plage de câble admissible	Cable range and range	See cable glands
Epaisseur du câble dans l'isolant	Thickness of cable in shell	25,9 mm
Capacité du presse-étoupe	Cable gland capacity	See cable glands
Tension maxi d'utilisation	Max. service voltage	See table
Intensité maxi admissible	Max. current rating	See contacts
Tension de tenue	Voltage withstanding	> 5000 V
Ligne de fuite minimale	Minimum creepage distance	48,1 mm
Distance sans l'air minimale	Minimum insulation distance in air	55,3 mm
Catégorie de surtension	Over-voltage category	See table
Degré de pollution	Pollution degree	See table
Résistance diélectrique	Dielectric strength	> 5000 kV/mm
Résistance de contact	Contact resistance	< 0,15 mΩ
Continuité de soudage	Welding continuity	Yes
Impédance	Impedance	N/A
Température de service	Operating temperature	-40 °C / +100 °C
Indice de protection (connecteur accouplé)	Protection index (coupled connector)	IP68 3h
Tenue à la corrosion (connecteur accouplé)	Corrosion resistance (coupled connector)	200h salt spray
Tenue aux fluides	Fluid resistance	CONFORME AVEC REQUISITUS EQUIPEMENTS
Classement feu fumée	Fire and smoke class	EN50345-2 / RE2HLS / RE2HLS
Endurance	Rating / service cycles	500 cycles
Poids	Weight	105,9 g
Système de verrouillage	Locking system	6x M6 CHC screws (en plug)
Système de câblage	Wiring system	6 conductors
Tenue aux chocs	Shock behaviour	EN61373:2000 cat. I, class B
Tenue en vibration	Vibration behaviour	EN61373:2000 cat. I, class B
Coûte de verrouillage	Locking force	75 N
Effort d'accouplement	Mating force	< 240 N
Rétention du contact (dans l'isolant)	Contact retention (into insulator)	> 80 N
Rétention du câble (masse - broche)	Cable retention (weight - pin)	N/A
Effort de traction du câble sur la fiche	Cable pulling force on plug	N/A
Rétention de l'isolant (dans le boîtier)	Insulator retention (into shell)	> 240 N
Protection des contacts de ligne	Line contact protection	Non

Project NR: PRJ-16-000907077

REV	DESCRIPTION	DATE	BY	APPR
F	Création - diffusion 332256	20NOV2016	MB	MV
G	Modification res. L ref 10-ka-212656A-JD7A devient 10-ka-212656A-JD7A (ajoutement de matériel) - 2017 332545	23NOV2017	JFG	MV

1 ( ) : cotes pour information / dimensions for information  
 ( ) : cotes de contrôle / inspection dimensions

2 ( ) Instructions de mise en oeuvre à appliquer par le client  
 Customer instructions to be applied by the customer

3 Customer manual = 157002-2

Marquage laser :  
 Année-Semaine + TE + FXPIRS-3M32-S  
 Laser marking :  
 Year-Week + TE + FXPIRS-3M32-S

Marquage laser :  
 Lignes de conducteurs (III, II, I)  
 Laser marking :  
 Conductor lines (III, II, I)

Isolant compatible avec les contacts :  
 Contact femelle calibre 12mm à serir de 50 à 120mm<sup>2</sup>  
 (plan S1884-211447)  
 Insulator available for contacts :  
 Female contacts caliber 12mm to be crimped from 50 to 120mm<sup>2</sup>  
 (drawing S1884-211447)

Lignes de conducteur repérées de moulage  
 Conductor lines marking molded on insulator (III, II, I)

Pion détrompage à monter par le client  
 Keying pin to be mounted by the customer

Service voltage according to EN50124-1/A2:2005	1500V	3000V	4000V
Service voltage (V)			
Over-voltage category	DV3	DV2	DV2
Pollution degree	PD3	PD2	PD2

10 Specification de packaging : 107-157005  
 Packaging spec : 107-157005

Logements de chaque côté pour pion de détrompage (rep.5)  
 Slots on each side for keying pin (rep.5)

Ø5,5 de chaque côté pour cosse de terre optionnelle  
 Ø5,5 on each side for optional earth lug

QTY	DESCRIPTION	REMARKS
1	0206-0329AS	Sachet déshydratant / Deshydrating bag
1	Y000000000-EMB030	Sachet ZIP / ZIP bag
1	Y000000-0206-0033AS	Boîte / Box
2	0222-0302AS	Helicoil+ M6x1 / Helicoil+ M6x1
4	YD-KA-210840A-QM00	Pion / Keying pin
1	YB-KA-210206A-RE00	Joint périphérique taille 1 / Peripheral seal size 1
4	Y000000-CHCM03X10-I	Vis CHC M3x10 / CHC screw M3x10
1	YK-KA-210184A-PN00	Isolant femelle taille 1 pour 3 cal. 12 / Female insulator size 1 for 3 cal. 12
1	YG-KA-212656A-JD7A	Corps d'embase fixe taille 1 à 3 ou 4 sorties / Surface mounting shell size 1 with 3 or 4 outlets

Observations / Remarks: Protection Plating; Fiche matière / Data sheet; Matière / Material; Masse (g) / Weight (g); Nbr / Qty; Codification / Part number; Désignation / Designation; REP / Item

Isometric view Scale 1:2

Reference commerciale / Commercial reference: FXPIRS-3M32-S

TE-KA-211443A-0000 PART NO

THIS DRAWING IS A CONTROLLED DOCUMENT.

APPROVED	DATE	BY	FOR
M. BONNIN	29NOV2016		TE Connectivity
J.P. GALIPAUD	29NOV2016		TE Connectivity
M. VIVARD	29NOV2016		TE Connectivity

DESCRIPTION: Embase femelle taille 1 / 3 cal. 12 à serir 50-120mm<sup>2</sup> / M32  
 Size 1 female receptacle / 3 cal. 12 to be crimped 50-120mm<sup>2</sup> / M32

APPLICATION SPEC: 1067.12 g

SCALE: 1:1

CUSTOMER DRAWING

# Validation / Qualification Test Report

CLASS 1 - Public



## 211444\_DEUTSCH: Size 1 male straight plug / 3 cal. 12 to be crimped 50-120 mm<sup>2</sup> / 3xM32

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Project NR  
PRJ-16-000907077

REVISIONS				
DATE	DESCRIPTION	DATE	BY	APPV
D	Création - diffusion 332256	2016/02/04	MB	MV
E	Modification rep. L rep. 17-04-2016 (04-2016) avant 17-04-2016 (04-2016) (ajout de la fiche et rep. 17-04-2016) et ajout de la fiche et rep. 17-04-2016	2016/02/04	JFG	MV

REPERES	N° FFP	DESCRIPTION	N° FFP
INSTRUCTIONS DE MONTAGE	114-157005-3	Mounting instructions	114-157005-3
NORMES DE REFERENCES	EN50467:2012	Standard reference	EN50467:2012
MATERIEU BOITIER	Aluminium	Material shell	Aluminium
FINITION BOITIER	Black PU paint	Shell plating finish	Black PU paint
MATERIEU ISOLANT	Polyamide	Material insulator	Polyamide
FICHE TECHNIQUE CONTACTS	114-157005	Contact technical data sheet	114-157005
RECORDONNEMENT DES CONTACTS	See contacts	Contact termination	See contacts
CALIBRE DU CONTACT	See contacts	Contact caliper	See contacts
PLAGE DE CABLE ADHESIVE	See cable glands	Cable crimp section range	See cable glands
DIAMETRE DU CABLE DANS L'ALVIERE	825 mm	Shank of cable per pin	825 mm
CAPACITE DU PRESSE ETOUTE	See cable glands	Cable gland capacity	See cable glands
TENSION MAXI D'UTILISATION	See table	Max. service voltage	See table
INTENSITE MAXI ADHESIVE	See contacts	Max. current rating	See contacts
TENSION DE TENUE	7 9000 V	Voltage withstanding	7 9000 V
LIGNE DE FUITE MINIMALE	113 mm	Minimum creepage distance	113 mm
DISTANCE DANS L'AIR MINIMALE	26.3 mm	Minimum insulation distance in air	26.3 mm
CATEGORIE DE SURTENSION	See table	Over-voltage category	See table
DEGRE DE POLLUTION	See table	Pollution degree	See table
RESISTANCE A L'ISOLEMENT	See table	Insulation withstanding	See table
RESISTANCE DE CONTACT	< 0.15 mΩ	Contact resistance	< 0.15 mΩ
CONTINUTE DE SoudAGE	DU	Soldering continuity	DU
DURETE	HA	Hardness	HA
TEMPERATURE DE SERVICE	-40 °C / +100 °C	Operating temperature	-40 °C / +100 °C
INDICE DE PROTECTION (CONNECTEUR ACCOUPLE)	IP68 5h	Protection index (mated connector)	IP68 5h
TENUE A LA CORROSION (CONNECTEUR ACCOUPLE)	200h salt spray	Corrosion withstanding (mated connector)	200h salt spray
TENUE AUX FLUIDES	Compliant with NF B030 requirements	Fluid withstanding	Compliant with NF B030 requirements
CLASSIFICATION FEU-FUMEE	EN50467-3 / EN50467-3 / EN50467-3	Fire and smoke class	EN50467-3 / EN50467-3 / EN50467-3
DURETE	200 cycles	Keying / unkeying cycles	200 cycles
Poids	710 g	Weight	710 g
SYSTEME DE VERROUILLAGE	2x M6 CHC screws	Locking system	2x M6 CHC screws
SYSTEME DE CODAGE	0 coding	Keying system	0 coding
TENUE AUX CHOC	EN61373:2000 cat. 1, class B	Shock withstanding	EN61373:2000 cat. 1, class B
TENUE EN VIBRATION	EN61373:2000 cat. 1, class B	Vibration withstanding	EN61373:2000 cat. 1, class B
COUPLE DE VERROUILLAGE	7±1 Nm	Locking torque	7±1 Nm
EFFORT D'ACCROUPEMENT	< 240 N	Insert force	< 240 N
RETENTION DU CONTACT (DANS L'ISOLANT)	1 80 N	Contact retention (into insert)	1 80 N
RETENTION DU CALIBRE (CASSER - BRISER) CONTACTS	N/A	Caliper retention (break - snap)	N/A
EFFORT DE TRACTION DU CABLE SUR LA FICHE	N/A	Cable pulling force on plug	N/A
RETENTION DE L'ISOLANT (DANS LE BOITIER)	< 240 N	Insert retention (into shell)	< 240 N
PROTECTION DES CONTACTS DE LIGNE	No	Line contact protection	No

1 ( ) : cotes pour information / dimensions for information  
2 ( ) : cotes de controle / inspection dimensions

Instructions de mise en oeuvre à appliquer par le client  
Customer instructions to be applied by the customer

3 Customer manual = 157002-1

4 Marquage laser : Année-Semaine + TE + FXPIPS-3M32-P  
Laser marking : Year-Week + TE + FXPIPS-3M32-P

5 Marquage laser : Lignes de conducteurs (III, II, I)  
Laser marking : Conductor lines (III, II, I)

6 Isolant compatible avec les contacts : Contact mâle calibre 12mm à servir de 50 à 120mm<sup>2</sup> (plan S1884-211446)  
Insulator available for contacts : male contacts caliber 12mm to be crimped from 50 to 120mm<sup>2</sup> (drawing S1884-211446)

7 Lignes de conducteur repérées de moulage  
Conductor lines marking molded on insulator (III, II, I)

8 Pion détrépage à monter par le client  
Keying pin to be mounted by the customer

Service voltage according to EN50124-1/A2:2005			
Service voltage (V)	1500V	3000V	4000V
Over-voltage category	OV3	OV2	OV3
Pollution degree	PD3	PD2	PD2

9 Specification de packaging : 107-157005  
Packaging spec : 107-157005

10 Logements de chaque côté pour pion de détrépage (rep.7)  
Slots on each side for keying pin (rep.7)

11 M5 pour cosse de terre optionnelle (longueur utile 10mm)  
Cs = 2,4 Nm suivant NF F61-021 tableau 2  
M5 for optional earth lug (thread length 10mm)  
Cs = 2,4 Nm according to NF F61-021 table 2

12 Couple de serrage 7±1 Nm  
Tightening torque 7±1 Nm

13 M5 de chaque côté pour tôles de bridage optionnelles (plan S1884-211442)  
M5 on each side for optional frames (drawing S1884-211442)

-	-	-	-	1.50	1	0206-0329AS	Sachet déshydratant Deshydrating bag	10
-	-	-	Plastique Plastic	0.80	1	Y000000000-EMB030	Sachet ZIP ZIP bag	9
-	-	-	Carton Carton	88.63	1	Y000000-0206-0033AS	Boite Box	8
-	-	-	FTMP 653 Polycarbonate Polycarbonate	0.21	4	YD-KA-210840A-DM00	Pion Keying pin	7
-	-	-	Inox Stainless steel	1.04	4	Y00000-CHCM03X10-I	Vis CHC M3x10 CHC screw M3x10	6
-	-	-	FTMP 803 Polyéthylène Polyethylene	0.05	2	205193-A00	Rondelle pour vis imperdable M06 Washer M06	5
-	-	-	Inox Stainless steel	8.73	2	CHCM06x25-I	Vis CHC M6x25 Screw CHC M6x25	4
-	-	-	Inox Stainless steel	0.14	2	MU-06-I	Rondelle plate Flat washer	3
-	-	-	FTMP 457 Polyamide Polyamide	201.71	1	YK-KA-210188A-PN00	Isolant mâle taille 1 pour 3 cal. 12 Male insulator size 1 for 3 cal. 12	2
-	-	-	Peinture PU noir RoHS Black PU paint RoHS	664.83	1	YF-KA-212658A-JD7A	Corps de fiche droite taille 1 à 3 ou 4 sorties Straight plug shell size 1 with 3 or 4 outlets	1
Observations Remarks	Protection Plating	Fiche matière Data sheet	Matériau Material	Masse (g) Weight (g)	Nbr Qty	Codification Part number	Désignation Designation	REP Item

Isometric view  
Scale 1:4

Référence commerciale / Commercial reference : FXPIPS-3M32-P

THIS DRAWING IS A CONTROLLED DOCUMENT.		TE Connectivity	
DESIGNER	REVISEUR	DATE	SCALE
M. VIMARD	F. GALIPAUD	29/10/2016	1:1
APPROUVE	DATE	TITRE	REVISIONS
M. VIMARD	29/10/2016	Plug mâle droite taille 1 / 3cal 12 à servir 50-120mm <sup>2</sup> / 3xM32	1
MATÉRIEL	POUR	PROJETS	REVISIONS
-	-	-	1
WEIGHT	977.51 g	SCALE	1:1
CUSTOMER DRAWING	SCALE	SHEET	1

# Validation / Qualification Test Report

CLASS 1- Public



## 211440\_DEUTSCH: Size 1 female semi-recessed receptacle / 3 cal. 12 to be crimped

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COUPE A-A

1 4  
2 7  
3 1  
4 6  
5 2

REFERENCES	N° FFP	DESCRIPTION	TYPE
Instructions de montage		Mounting instructions	N/A
Normes de références		Standards references	NF F 61-030 et EN50467-01E
Matériau boîtier		Material shell	Aluminium
Peinture boîtier		Shell plating finish	Peinture PU noir RoHS
Matériau isolant		Insulator material	Polyamide
Fiche technique contacts		Contacts data sheet	114-177005
Raccordement des contacts		Contact termination	To be crimp and to be screw
Calibre du contact		Contact caliber	012 mm
Plage de câble admissible		Cable cross section range	N/A
Epaisseur du câble dans l'olive		Cable of cable per cell	029 mm
Capacité du presse à coupe		Cable gland capacity	NA
Tension maxi d'utilisation		Max service voltage	Voir tableau
Intensité maxi admissible		Max current rating	Voir contact
Tension de tenue		Voltage withstanding	1 9000V
Largeur de face minimale		Minimum crimping distance	47 mm
Distance dans l'air minimale		Minimum insulation distance in air	25 mm
Catégorie de surtension		Over voltage category	Voir tableau
Degré de pollution		Pollution degree	Voir tableau
Résistance diélectrique		Insulation withstanding	1 5000 100m
Résistance de contact		Contact resistance	0,15 mΩm
Continuité de blindage		Shielding continuity	oui
Impédance		Impedance	N/A
Température de service		Operating temperature	-40°C to +100°C
Indice de protection (connecteur accouplé)		Protection index (mated connector)	IP 68 connected
Tenue à la corrosion (connecteur accouplé)		Corrosion withstanding (mated connector)	200 heures B5
Tenue aux fluides		Fluids withstanding	selon IFF6030
Classification Feu-Fumée		Fine and smoke class	selon IFF6030
Endurance		Withstand cycling cycles	200 cycles
Poids		Weight	500 grammes
Système de verrouillage		Locking system	2x vis CHC M6
Système de câblage		Wiring system	3 câblage
Tenue aux chocs		Shock behaviour	EN61373-000 cat1, class B
Tenue en vibration		Vibration behaviour	EN61373-000 cat1, class B
Couple de verrouillage		Locking torque	7±1 Nm
Effort d'accouplement		Mating force	1 240 N
Rétention du contact (dans l'isolant)		Contact retention (into insulator)	1 00 N
Rétention du calibre (masse - Brosche)		Caliber retention (weight - strip contact)	2±0,1 - 011,957
Effort de traction du câble sur la fiche		Cable pulling force on plug	N/A
Rétention de l'isolant (dans le boîtier)		Insulator retention (into shell)	1 240 N
Protection des contacts de ligne		Line contact protection	non

Project NR  
PRJ-16-000907077

REVISIONS	DATE	BY	APP
F	30/01/2016	MB	MV
G	30/01/2016	JFG	MV

1 ( ) : cotes pour information / dimensions for information  
2 ( ) : cotes de contrôle / inspection dimensions

2 Instructions de mise en oeuvre à appliquer par le client  
Customer instructions to be applied by the customer

3 Customer manual = 157002

Marquage laser : Année Semaine + TE + FXPIWC-3XXX-S  
Laser marking : Year-Week + TE + FXPIWC-3XXX-S

Isolant compatible avec les contacts : Contact femelle calibre 12mm à sertir de 50 à 120mm2 (plan S1884-211447)  
Insulator available for contacts : Female contacts caliber 12mm to be crimped from 50 to 120mm2 (drawing S1884-211447)

Lignes de conducteur repérées de moulage  
Conductor lines marking molded on insulator (III, II, I)

Pion détroupage à monter par le client  
Keying pin to be mounted by the customer

Service voltage according to EN50124-1/A2:2005	1500V	3000V	4000V
Service voltage (V)	DV3	DV2	DV3
Over-voltage category	DV3	DV2	DV3
Pollution degree	PD3	PD2	PD2

9 Specification de packaging : 107-157005  
Packaging spec : 107-157005

Logements de chaque côté pour pion de détroupage (rep.6)  
Slots on each side for keying pin (rep.6)

Ø5,5 pour vis fixation panneau  
Ø5,5 holes for panel screws

M4 pour cosse de terre optionnelle (longueur utile 8mm)  
Cs = 2,4 Nm suivant NF F61-021 tableau 2  
M4 for optional earth lug (thread length 8 mm)  
Cs = 2,4 Nm according to NF F61-021 table 2

Isometric view  
Scale 1:2

DESCRIPTION	QTY	UNIT	REF	REMARKS
Sachet déshydratant / Deshydrating bag	10		0206-0329AS	
Sachet ZIP / ZIP bag	2		Y000000000-EMB030	
Boîte / Box	8		Y000000-0206-0033AS	
Helicoil+ M6x1 / Helicoil+ M6x1	7		0222-0302AS	
Joint plat embase semi encastrée taille 1 / Flat seal for semi recessed receptacle size 1	6		YB-KA-210572A-RE00	
Pion / Keying pin	5		YD-KA-210840A-QM00	
Joint périphérique taille 1 / Peripheral seal size 1	4		YB-KA-210206A-RE00	
Vis ChC M3x10 / ChC screw M3x10	3		Y000000-CHCM03X10-I	
Isolant femelle taille 1 pour 3 cal. 12 / Female insulator size 1 for 3 cal. 12	2		YK-KA-210184A-PN00	
Corps de traversée de paroi Taille 1 / Bulkhead shell Size 1	1		YG-KA-212677A-JD7A	
Observations / Remarks				
Peinture PU noir RoHS / Black PU paint RoHS			FMME 4005	
Fiche matière / Data sheet			FTMP 653	
Matériau / Material			FTMP 874	
Masse (g) / Weight (g)			FTMP 874	
Nbr / Qty			FTMP 874	
Codification / Part number			FTMP 457	

Vue B / B View

485 (3/13)  
Sallesewa DRAWING

Référence commerciale / Commercial reference : FXPIWC-3XXX-S

YE-KA-211440A-0000  
PART NO

THIS DRAWING IS A CONTROLLED DOCUMENT.

DESIGNING	DESIGNED	DATE
M. VIVARD	J. GALIPAUD	30/01/2016
M. VIVARD	M. VIVARD	30/01/2016

Enbase semi-encastrée femelle taille 1 / 3 cal. 12 à sertir  
Size 1 female semi-recessed receptacle / cal. 12 to be crimped

TE Connectivity

502.41 g  
CUSTOMER DRAWING

SCALE 1:1 SHEET 1 OF 1 REV G

485 (3/13)  
Sallesewa DRAWING



