



TEST REPORT

EN IEC 61076-2-111

Connectors for electronic equipment — Product requirements

Part 2-111: Circular connectors —

Detail specification for power connectors with M12 screw-locking

Report reference No. : 704102400848-00

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Standard : EN IEC 61076-2-111:2018

Test Report Form No. : EN IEC 61076-2-111A

TRF modified by : TÜV Product Service GmbH

Master TRF : Dated 2024-09

Copyright blank test report : This test report is based on the contents of the standard. It was prepared by TÜV Product Service GmbH.

Test procedure : TUV MARK

Procedure deviation..... : N/A

Non-standard test method..... : N/A

National deviations : N/A

Number of pages (Report) : 20

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Type of test object	M12 L-coding connector
Trademark	N/A
Model and/or type reference	121005-01-xxx, 121005-02-xxx, 121005-03-xxx, 121005-04-xxx, 121005-05-xxx, 121005-06-xxx (See details at page 4)
Rating(s)	See page 4 of this report
Manufacturer	Same as applicant
Address	Same as applicant
Sub-contractors/ tests (clause)	N/A
Address	N/A
Date of receipt of test item	2024-01-24
Date(s) of performance of test	2024-01-25 to 2024-11-25
Test item particulars	M12 L-coding connector
Coding	L
Style	See details at page 4
Contacts	4+FE
Rated Voltage a.c. or d.c. (V)	See details at page 4
Rated current	See details at page 4
Climatic category	25/85/21
Possible test case verdicts:	
- test case does not apply to the test object	N(.A.)
- test object does meet the requirement	P(ass)
- test object does not meet the requirement	F(ail)
Attachments:	
•Test report EN IEC 61076-2-111:2018	
•Photo documentation	
•Data form for electrical equipment and machinery	
General remarks:	
"(see remark #)" refers to a remark appended to the report.	
"(see appended table)" refers to a table appended to the report.	
Throughout this report a point (comma) is used as the decimal separator.	
The test results presented in this report relate only to the object tested.	
This report shall not be reproduced except in full without the written approval of the testing laboratory.	



Remark:

N/A

Summary of testing:

The sample's mentioned in this report is/are submitted/ supplied/ manufactured by client. The laboratory therefore assumes no responsibility for accuracy of information on the brand name, model number, origin of manufacture, consignment or any information supplied.

1. Complete tests on set of 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001. Rest of the models for construction check only.
2. These test results comply with the requirements of EN IEC 61076-2-111:2018

Copy of marking plate:

Refer to CDF

Factory:

Same as applicant.



General product information:

Models:	121005-01-xxx, 121005-02-xxx, 121005-03-xxx, 121005-04-xxx, 121005-05-xxx, 121005-06-xxx "xxx": means customer designed number, may be three alphanumeric digits.
Rated voltage:	63VAC/VDC
Rated current:	16A
Connector type:	L
Number of contacts:	4+FE
Degree of protection:	IP68 (2m, 1h) (after mated)

Model	Styles of connectors
121005-01-xxx	Assemble male style
121005-02-xxx	Assemble female style
121005-03-xxx	Fix male style
121005-04-xxx	Fix female style
121005-05-xxx	Free male style
121005-06-xxx	Free female style

Remark:

Test group EP depend on the factory process documentation and material certification.

EN IEC 61076-2-111			
Clause	Requirement + Test	Result - Remark	Verdict

	Preliminary Test group P (TABLE 12)		P
P1	General examination		P
	Visual examination: IEC 60512 Test 1a		P
	Unmated connectors		P
	There shall be no defect that would impair normal operation		P
	Dimensional examination: IEC 60512 Test 1b		P
	The dimensions shall comply with those specified in Clause 4		P
P2	Contact resistance		P
6.4.5	Conditions: IEC 60512, Test 2a Standard atmospheric conditions connecting points see 6.2		P
	5 mΩ max. Initial value:	See Appendix Table P2	P
P3	Insulation resistance		P
6.4.6	Test voltage 500 V ± 15 V d.c. Method A		P
	10 ⁸ Ω min.	See Appendix Table P3	P
P4	Voltage proof		P
6.4.2	Between contacts	See Appendix Table P4	P
	Between contacts and metal-housing	See Appendix Table P4	P
	Test voltage:	See Appendix Table 31	P

	Dynamic/ climatic Test group AP (TABLE 13)		P
AP1	Insertion and withdrawal forces		P
6.5.3	IEC 60512, Test 13b		P
	Standard atmospheric conditions Max. speed = 10 mm/s		P
	Number of poles:	5	P
	Max. total insertion force(N):	<45N	P
	Max. total withdrawal force (N):	<45N	P

EN IEC 61076-2-111			
Clause	Requirement + Test	Result - Remark	Verdict
AP2	Gauge retention force		P
	IEC 60512, Test 16e		P
	Female contacts only 3 contacts		P
	Each contact to be tested shall have the maximum size gauge specified inserted and withdrawn three times.		P
	After which, the minimum size retention force gauge specified shall be inserted.		P
	During testing: Contacts shall support the weight of the individual contact retention force gauge in the vertically downward direction. The gauge shall be maintained for 5s minimum.		P
AP3	Vibration		P
6.6.1	IEC 60512, Test 6d		P
	Standard atmospheric condition.		P
	Connectors in mated and locked position		P
	The fixed and free connector shall be rigidly installed in a suitable fixture as specified in 6.3		P
	Vibration severity: 10 Hz to 500 Hz and 0,35 mm or 50 m/s ²		P
	Sweep cycles: 10		P
	Full duration: 6 h		P
	Duration of disturbance 1 µs max.		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table AP3	P
	There shall be no defect that would impair normal operation.		P
AP4	Shock		P
	Half sine shock acceleration 490 m/s ² (50 g)		P
	Duration of impact: 11 ms		P
	Duration of disturbance 1 µs max.		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table AP4	P
	There shall be no defect that would impair normal operation.		P

EN IEC 61076-2-111			
Clause	Requirement + Test	Result - Remark	Verdict
AP5	Rapid change of temperature		P
	IEC 60512, Test 11d		P
	–25°C to 85 °C, t = 30 min, 5 cycles		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table AP5	P
	Insulation resistance 10 ⁸ Ω min	>10 ⁸ Ω	P
	Voltage proof : same as P5		P
	There shall be no defect that would impair normal operation	no defect	P
AP6	Climatic sequence		P
AP6.1	Dry heat		P
	Temp.: 85 °C	85 °C	P
	Duration: 16 h	16 h	P
	Insulation resistance at high temperature 10 ⁸ Ω min	>10 ⁸ Ω	P
AP6.2	Damp heat, cyclic, first cycle		P
	IEC 60512 11m Method Db		P
	Temp.: 40 °C	40 °C	P
	Recovery time: 2 h	2 h	P
	There shall be no defect that would impair normal operation	no defect	P
AP6.3	Cold		P
	Temp.: –25 °C	–25 °C	P
	Duration: 2 h	2 h	P
	Recovery time: 2 h	2 h	P
	There shall be no defect that would impair normal operation	no defect	P
AP6.4	Damp heat, cyclic, remaining cycles		P
	Conditions according to AP6.2		P
	5 cycles, Recovery time: 2 h		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table AP6.4	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulation resistance $10^8 \Omega$ min	$>10^8 \Omega$	P
	Voltage proof : same as P5		P
	There shall be no defect that would impair normal operation	no defect	P
	Insertion and withdrawal forces as AP1.		P
AP7	Impacting dust and water		P
AP7.1	IP code second characteristic numeral	IP68 (2m, 1h) (after mated)	P
	No leakage on contacts		P
AP7.2	IP code first characteristic numeral	IP68 (2m, 1h) (after mated)	P
	IP6X no deposit of dust on contacts		P
AP7.3	applies only to connectors with glass to metal seal.		N/A
	Contact resistance rise in relation to initial values 15 m Ω max.		N/A
	Insulation resistance $10^8 \Omega$ min		N/A
	Voltage proof : same as P5		N/A
	Insertion and withdrawal forces as AP1.		N/A
	Pressure Differential : same as P6		N/A
AP7.4	Contact resistance rise in relation to initial values 15 m Ω max.	See Appendix Table AP7	P
	Insulation resistance $10^8 \Omega$ min	$>10^8 \Omega$	P
	Voltage proof : same as P5		P
	Insertion and withdrawal forces as AP1.		P
AP8	Visual examination		P
	There shall be no defect that would impair normal operation		P
AP9	Polarizing method		P
	Conditions: IEC 60512, Test 13e		P
	Insertion force: 35 N min.		P
	It shall be possible to correctly align and mate the appropriate mating connectors.		P
	It shall not be possible to mate the connectors in any other than the correct manner.		P

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Clause	Requirement + Test	Result - Remark	Verdict

	Mechanical endurance Test group BP (TABLE 14)		P
BP1	Gauge retention force		P
	IEC 60512, Test 16e		P
	Female contacts only 3 contacts		P
	Each contact to be tested shall have the maximum size gauge specified inserted and withdrawn three times.		P
	After which, the minimum size retention force gauge specified shall be inserted.		P
	During testing: Contacts shall support the weight of the individual contact retention force gauge in the vertically downward direction. The gauge shall be maintained for 5s minimum.		P
BP2	Mechanical operation (half of the specified number of operations)		P
	First half of the specified number of operations:		P
	Speed 10 mm/s max.		P
	Rest 30 s (unmated)		P
	Operations see 5.3.2		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table BP2	P
	There shall be no defect that would impair normal operation		P
BP3	Climatic test		P
BP3.1	Corrosion industrial atmosphere		P
	Flowing mixed gas corrosion – 4 days, test method 4 according IEC 60068-2-60		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table BP3.1	P
BP4	Mechanical operation (remaining half of specified number of operations)		P
	Remaining half of the specified number of operations :		P
	Speed 10 mm/s max.		P
	Rest 30 s (unmated)		P
	Operations see 5.3.2		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table BP4	P
	Insulation resistance 10 ⁸ Ω min	>10 ⁸ Ω	P
	Voltage proof : same as P5		P
	Unmated connectors		P
	Pressure Differential: same as P6		P
	Visual examination		P
	There shall be no defect that would impair normal operation		P
BP5.1	IP code second characteristic numeral		P
	No leakage on contacts	IP68 (2m, 1h) (after mated)	P
BP5.2	Insulation resistance 10 ⁸ Ω min	>10 ⁸ Ω	P
	Voltage proof : same as P5		P
BP6	Insertion and withdrawal forces		P
6.5.4	IEC 60512, Test 13b		P
	Standard atmospheric conditions Max. speed = 10 mm/s		P
	Number of poles:	5	P
	Max. total insertion force(N):	<45N	P
	Max. total withdrawal force (N):	<45N	P
BP7	Gauge retention force		P
	IEC 60512, Test 16e		P
	Female contacts only 3 contacts		P
	Each contact to be tested shall have the maximum size gauge specified inserted and withdrawn three times.		P
	After which, the minimum size retention force gauge specified shall be inserted.		P
	During testing: Contacts shall support the weight of the individual contact retention force gauge in the vertically downward direction. The gauge shall be maintained for 5s minimum.		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Electrical load Test group CP (TABLE 15)		P
CP1	Rapid change of temperature		P
	IEC 60512, Test 11d		P
	−25°C to 85 °C, t = 30 min, 5 cycles		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table CP1	P
	Insulation resistance 10 ⁸ Ω min		P
	Voltage proof : same as P5		P
	There shall be no defect that would impair normal operation		P
CP2	Mechanical operation		P
	First half of the specified number of operations :		P
	Speed 10 mm/s max.		P
	Rest 30 s (unmated)		P
	Operations see 5.3.2		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table CP2	P
	There shall be no defect that would impair normal operation		P
CP3	Electrical load and temperature		P
	Duration: 1 000 h		P
	Amb.temp.: 40 °C		P
	Current load according to 5.2.3		P
	Recovery time: 2 h		P
	Temp. sensor in centre of specimen		P
	Contact resistance rise in relation to initial values 15 mΩ max.	See Appendix Table CP3	P
	Insulation resistance 10 ⁸ Ω min		P
	Voltage proof : same as P5		P
CP4	Impacting dust and water		P
CP4.1	IP code second characteristic		P
	No leakage on contacts		P

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Clause	Requirement + Test	Result - Remark	Verdict

CP4.2	Insulation resistance $10^8 \Omega \text{ min}$		P
	Voltage proof : same as P5		P
CP5	Unmated connectors		P
	Visual examination		P
	There shall be no defect that would impair normal operation		P

	Chemical resistivity Test group DP (TABLE 16)		P
DP1	Resistance to fluids		P
	IEC 60512, Test 19c		P
	5 cycles		P
	The fluid used for testing is upon agreement between manufacturer and user :		P
	Phase 3 test temperature specified in the specification:		P
DP2	Clearing of specimen by washing briefly in light petrol		P
	Contact resistance rise in relation to initial values 15 m Ω max.	See Appendix Table DP2	P
DP3	Voltage proof : same as P5		P
DP4	Visual examination		P
	There shall be no defect that would impair normal operation		P

	Connection method tests - Test group EP (TABLE 17)		-
EP1	Solderless connections: screw, crimp, insulation displacement, insulation piercing, press-in	Crimp and screw	-
	See relevant IEC 60352 standard, for screw-type terminations see relevant IEC 60998-2-1 or IEC 60999	Routine test according to IEC 60352 and 60998	-

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Clause	Requirement + Test	Result - Remark	Verdict

P3	TABLE: Initial measurements (Contact resistance) 5 mΩ max.							P
Test current				0.1A				—
Test sample	Contact	1	2	3	4	FE		—
1	ΔU1 [mV]	0.321	0.341	0.324	0.347	0.33		P
	R1 [mΩ]	3.21	3.41	3.24	3.47	3.3		
2	ΔU1 [mV]	0.328	0.341	0.323	0.333	0.332		P
	R1 [mΩ]	3.28	3.41	3.23	3.33	3.32		
3	ΔU1 [mV]	0.317	0.312	0.319	0.314	0.316		P
	R1 [mΩ]	3.17	3.12	3.19	3.14	3.16		
4	ΔU1 [mV]	0.316	0.321	0.317	0.322	0.32		P
	R1 [mΩ]	3.16	3.21	3.17	3.22	3.2		
5	ΔU1 [mV]	0.326	0.33	0.326	0.333	0.335		P
	R1 [mΩ]	3.26	3.3	3.26	3.33	3.35		
6	ΔU1 [mV]	0.324	0.325	0.321	0.317	0.331		P
	R1 [mΩ]	3.24	3.25	3.21	3.17	3.31		
7	ΔU1 [mV]	0.298	0.297	0.301	0.296	0.305		P
	R1 [mΩ]	2.98	2.97	3.01	2.96	3.05		
8	ΔU1 [mV]	0.325	0.33	0.328	0.327	0.324		P
	R1 [mΩ]	3.25	3.3	3.28	3.27	3.24		
9	ΔU1 [mV]	0.33	0.337	0.33	0.332	0.332		P
	R1 [mΩ]	3.3	3.37	3.3	3.32	3.32		
10	ΔU1 [mV]	0.319	0.31	0.316	0.314	0.313		P
	R1 [mΩ]	3.19	3.1	3.16	3.14	3.13		
11	ΔU1 [mV]	0.298	0.313	0.301	0.303	0.313		P
	R1 [mΩ]	2.98	3.13	3.01	3.03	3.13		
12	ΔU1 [mV]	0.327	0.321	0.321	0.322	0.326		P
	R1 [mΩ]	3.27	3.21	3.21	3.22	3.26		

Supplementary information: Max contact resistance for combination match as below
121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.

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Clause	Requirement + Test	Result - Remark	Verdict
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P3-P4	1.1 TABLE: Voltage proof / Insulation resistance			P
	Insulation resistance R (MΩ) 500 V ± 15 V d.c.	Voltage proof U (V)		
	Between contacts and metal-housing 10 ⁸ Ω min.	Between contacts 840V	Between contacts and metal-housing 840V	
1	7×10 ⁹	ok	ok	
2	6×10 ⁹	ok	ok	
3	6×10 ⁹	ok	ok	
4	2×10 ⁹	ok	ok	
5	5×10 ⁹	ok	ok	
6	9×10 ⁹	ok	ok	
7	7×10 ⁹	ok	ok	
8	8×10 ⁹	ok	ok	
9	3×10 ⁹	ok	ok	
10	9×10 ⁹	ok	ok	
11	5×10 ⁹	ok	ok	
12	4×10 ⁹	ok	ok	
supplementary information:				

AP3	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current				0.1A				—
Condition				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
1	ΔU2 [mV]	0.425	0.442	0.368	0.428	0.421		P
	R2 [mΩ]	4.25	4.42	3.68	4.28	4.21		
	ΔR[mΩ]	1.04	1.01	0.44	0.81	0.91		
2	ΔU2 [mV]	0.435	0.394	0.396	0.42	0.408		P
	R2 [mΩ]	4.35	3.94	3.96	4.20	4.08		
	ΔR[mΩ]	1.07	0.53	0.73	0.87	0.76		
3	ΔU2 [mV]	0.317	0.312	0.319	0.314	0.316		P
	R2 [mΩ]	3.17	3.12	3.19	3.14	3.16		
	ΔR[mΩ]	1.02	0.95	0.39	1.07	0.78		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No.: P-1205-01-002

EN IEC 61076-2-111								
Clause		Requirement + Test				Result - Remark		Verdict
AP4	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
1	ΔU2 [mV]	0.385	0.404	0.387	0.432	0.421		P
	R2 [mΩ]	3.85	4.04	3.87	4.32	4.21		
	ΔR[mΩ]	0.64	0.63	0.63	0.85	0.91		
2	ΔU2 [mV]	0.4	0.43	0.36	0.373	0.438		P
	R2 [mΩ]	4.00	4.30	3.60	3.73	4.38		
	ΔR[mΩ]	0.72	0.89	0.37	0.40	1.06		
3	ΔU2 [mV]	0.421	0.381	0.354	0.387	0.402		P
	R2 [mΩ]	4.21	3.81	3.54	3.87	4.02		
	ΔR[mΩ]	1.04	0.69	0.35	0.73	0.86		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

AP5	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current:				0.1A				—
Condition :				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
1	ΔU2 [mV]	0.356	0.396	0.415	0.436	0.403		P
	R2 [mΩ]	3.56	3.96	4.15	4.36	4.03		
	ΔR[mΩ]	0.35	0.55	0.91	0.89	0.73		
2	ΔU2 [mV]	0.431	0.418	0.382	0.404	0.375		P
	R2 [mΩ]	4.31	4.18	3.82	4.04	3.75		
	ΔR[mΩ]	1.03	0.77	0.59	0.71	0.43		
3	ΔU2 [mV]	0.384	0.419	0.388	0.401	0.369		P
	R2 [mΩ]	3.84	4.19	3.88	4.01	3.69		
	ΔR[mΩ]	0.67	1.07	0.69	0.87	0.53		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No. 121005-01-002

EN IEC 61076-2-111								
Clause		Requirement + Test				Result - Remark		Verdict
AP6.4	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
1	ΔU2 [mV]	0.373	0.402	0.384	0.396	0.404		P
	R2 [mΩ]	3.73	4.02	3.84	3.96	4.04		
	ΔR[mΩ]	0.52	0.61	0.60	0.49	0.74		
2	ΔU2 [mV]	0.361	0.375	0.404	0.414	0.367		P
	R2 [mΩ]	3.61	3.75	4.04	4.14	3.67		
	ΔR[mΩ]	0.33	0.34	0.81	0.81	0.35		
3	ΔU2 [mV]	0.395	0.414	0.393	0.393	0.406		P
	R2 [mΩ]	3.95	4.14	3.93	3.93	4.06		
	ΔR[mΩ]	0.81	0.76	0.46	0.76	0.58		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

AP7	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current:				0.1A				—
Condition :				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
1	ΔU2 [mV]	0.37	0.442	0.406	0.441	0.39		P
	R2 [mΩ]	3.70	4.42	4.06	4.41	3.90		
	ΔR[mΩ]	0.49	1.01	0.82	0.94	0.60		
2	ΔU2 [mV]	0.427	0.392	0.374	0.373	0.43		P
	R2 [mΩ]	4.27	3.92	3.74	3.73	4.30		
	ΔR[mΩ]	0.99	0.51	0.51	0.40	0.98		
3	ΔU2 [mV]	0.423	0.381	0.398	0.383	0.419		P
	R2 [mΩ]	4.23	3.81	3.98	3.83	4.19		
	ΔR[mΩ]	1.06	0.69	0.79	0.69	1.03		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No.: 121005-01-002

EN IEC 61076-2-111								
Clause		Requirement + Test				Result - Remark		Verdict
BP2	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
4	ΔU2 [mV]	0.384	0.354	0.4	0.406	0.403		P
	R2 [mΩ]	3.84	3.54	4.00	4.06	4.03		
	ΔR[mΩ]	0.68	0.33	0.83	0.84	0.83		
5	ΔU2 [mV]	0.424	0.404	0.426	0.384	0.39		P
	R2 [mΩ]	4.24	4.04	4.26	3.84	3.90		
	ΔR[mΩ]	0.98	0.74	1.00	0.51	0.55		
6	ΔU2 [mV]	0.358	0.427	0.41	0.398	0.375		P
	R2 [mΩ]	3.58	4.27	4.10	3.98	3.75		
	ΔR[mΩ]	0.34	1.02	0.89	0.81	0.44		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

BP3.1	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current				0.1A				—
Condition				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
4	ΔU2 [mV]	0.397	0.415	0.384	0.359	0.356		P
	R2 [mΩ]	3.97	4.15	3.84	3.59	3.56		
	ΔR[mΩ]	0.81	0.94	0.67	0.37	0.36		
5	ΔU2 [mV]	0.36	0.38	0.379	0.371	0.386		P
	R2 [mΩ]	3.60	3.80	3.79	3.71	3.86		
	ΔR[mΩ]	0.34	0.50	0.53	0.38	0.51		
6	ΔU2 [mV]	0.404	0.373	0.383	0.36	0.395		P
	R2 [mΩ]	4.04	3.73	3.83	3.60	3.95		
	ΔR[mΩ]	0.80	0.48	0.62	0.43	0.64		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No. 121005-01-002

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Clause		Requirement + Test				Result - Remark		Verdict
BP4	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
4	ΔU2 [mV]	0.378	0.409	0.387	0.407	0.388		P
	R2 [mΩ]	3.78	4.09	3.87	4.07	3.88		
	ΔR[mΩ]	0.62	0.88	0.70	0.85	0.68		
5	ΔU2 [mV]	0.42	0.402	0.408	0.426	0.376		P
	R2 [mΩ]	4.20	4.02	4.08	4.26	3.76		
	ΔR[mΩ]	0.94	0.72	0.82	0.93	0.41		
6	ΔU2 [mV]	0.38	0.405	0.356	0.373	0.432		P
	R2 [mΩ]	3.80	4.05	3.56	3.73	4.32		
	ΔR[mΩ]	0.56	0.80	0.35	0.56	1.01		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

CP1	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current				0.1A				—
Condition				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
7	ΔU2 [mV]	0.372	0.337	0.356	0.395	0.398		P
	R2 [mΩ]	3.72	3.37	3.56	3.95	3.98		
	ΔR[mΩ]	0.74	0.40	0.55	0.99	0.93		
8	ΔU2 [mV]	0.416	0.39	0.367	0.417	0.418		P
	R2 [mΩ]	4.16	3.90	3.67	4.17	4.18		
	ΔR[mΩ]	0.91	0.60	0.39	0.90	0.94		
9	ΔU2 [mV]	0.394	0.415	0.396	0.388	0.415		P
	R2 [mΩ]	3.94	4.15	3.96	3.88	4.15		
	ΔR[mΩ]	0.64	0.78	0.66	0.56	0.83		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No. 121005-01-002

EN IEC 61076-2-111								
Clause		Requirement + Test				Result - Remark		Verdict
CP2	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
7	ΔU2 [mV]	0.346	0.332	0.397	0.364	0.366		P
	R2 [mΩ]	3.46	3.32	3.97	3.64	3.66		
	ΔR[mΩ]	0.48	0.35	0.96	0.68	0.61		
8	ΔU2 [mV]	0.377	0.385	0.374	0.391	0.418		P
	R2 [mΩ]	3.77	3.85	3.74	3.91	4.18		
	ΔR[mΩ]	0.52	0.55	0.46	0.64	0.94		
9	ΔU2 [mV]	0.425	0.438	0.428	0.372	0.374		P
	R2 [mΩ]	4.25	4.38	4.28	3.72	3.74		
	ΔR[mΩ]	0.95	1.01	0.98	0.40	0.42		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

CP3	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current:				0.1A				—
Condition :				ΔR =R2-R1				
Test sample	Contact	1	2	3	4	FE		—
7	ΔU2 [mV]	0.373	0.385	0.359	0.396	0.386		P
	R2 [mΩ]	3.73	3.85	3.59	3.96	3.86		
	ΔR[mΩ]	0.75	0.88	0.58	1.00	0.81		
8	ΔU2 [mV]	0.379	0.405	0.436	0.389	0.368		P
	R2 [mΩ]	3.79	4.05	4.36	3.89	3.68		
	ΔR[mΩ]	0.54	0.75	1.08	0.62	0.44		
9	ΔU2 [mV]	0.392	0.406	0.424	0.416	0.421		P
	R2 [mΩ]	3.92	4.06	4.24	4.16	4.21		
	ΔR[mΩ]	0.62	0.69	0.94	0.84	0.89		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								

Report Reference No.: 121005-01-002

EN IEC 61076-2-111								
Clause		Requirement + Test				Result - Remark		Verdict
DP2	TABLE: Final measurements (Contact resistance) 10 mΩ max							P
Test current					0.1A			—
Condition					ΔR =R2-R1			
Test sample		Contact	1	2	3	4	FE	—
10	ΔU2 [mV]	0.362	0.376	0.373	0.407	0.363		P
	R2 [mΩ]	3.62	3.76	3.73	4.07	3.63		
	ΔR[mΩ]	0.43	0.66	0.57	0.93	0.50		
11	ΔU2 [mV]	0.36	0.409	0.388	0.335	0.372		P
	R2 [mΩ]	3.60	4.09	3.88	3.35	3.72		
	ΔR[mΩ]	0.62	0.96	0.87	0.32	0.59		
12	ΔU2 [mV]	0.373	0.394	0.355	0.405	0.393		P
	R2 [mΩ]	3.73	3.94	3.55	4.05	3.93		
	ΔR[mΩ]	0.46	0.73	0.34	0.83	0.67		
Supplementary information: Max contact resistance for combination match as below 121005-01-002 match 121005-02-001, 121005-05-001 match 121005-06-001.								