IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

CB TEST CERTIFICATE

Product	Connectors
Name and address of the applicant	WAGO Kontakttechnik GmbH & Co.KG Hansastrasse 27, 32423 Minden/Westfalen Germany
Name and address of the manufacturer	WAGO Kontakttechnik GmbH & Co.KG Hansastrasse 27, 32423 Minden/Westfalen Germany
Name and address of the factory Note: *When more than one factory, please report on page 2*	☒ Additional information on page 2 WAGO Kontakttechnik GmbH & Co.KG Hansastrasse 27, 32423 Minden/Westfalen Germany
Ratings and principal characteristics	41 A (6mm²) 57 A (10mm²) 500V~for pcb male connectors and 800V~for all other connectors without lever 41 A (6mm²) 57 A (10mm²) 800V~for all connectors with lever
Trademark (if any)	WAGO
Customer's Testing Facility (CTF) Stage used	CTF Stage 3
Model / Type Ref.	Series 831
Additional information (if necessary may also be reported on page 2)	☐ Additional information on page 2 This CB has been issued due to the fact that optional variant have been included and an additional factory location and replaces CB NL-61360 dated 2019-11-01
A sample of the product was tested and found to be in conformity with	IEC 61984:2008
As shown in the Test Report Ref. No. which forms part of this Certificate	2238917.51

This CB Test Certificate is issued by the National Certification Body

DEKRA Certification B.V.
Meander 1051, NL-6825 MJ Arnhem, Netherlands

DEKRA

Date: 2020-10-15

Signature: Anouschka Slingerland

IEC SYSTEM FOR MUTUAL RECOGNITION OF TEST CERTIFICATES FOR ELECTRICAL EQUIPMENT (IECEE) CB SCHEME

Additional factory

Wago Elwag sp.z.o.o.
ul. Piekna 58 a
50-506 Wroclaw
Poland

Wago Elwag
Innowacyjna 2
55-330 Wroblowice
Poland

WAGO Kontakttechnik GmbH & Co. KG Werk Sondershausen
Waldstrasse 1
99706 Sondershausen
Germany

Wago Pvt. Ltd.
C-27, Sector-58, Phase III
201301 Noida Uttar Pradesh
India

Wago Electronic (Tianjin) Co. Ltd.
No. 5 Quanhui Road
Wu Qing Development Area
301700 Tianjin
China

WAGO Contact S.A.
Route de l'Industrie 19, CP 168, 1564, Domdidier
Switzerland

WAGO Kontakttechnik GmbH & Co. KG
Cammer Strasse. 17, 32423 Minden
Germany

This CB Test Certificate is issued by the National Certification Body

DEKRA Certification B.V.
Meander 1051, NL-6825 MJ Arnhem, Netherlands

Date: 2020-10-15

Signature: Anouschka Slingerland

Test Report issued under the responsibility of:

TEST REPORT
IEC 61984
Connectors – Safety requirements and tests

Report Number ..... :	2238917.51
Date of issue ..... :	2020-10-15
Total number of pages ..... :	33 pages
Name of Testing Laboratory preparing the Report ..... :	DEKRA Certification B.V. Meander 1051, 6825 MJ Arnhem, The Netherlands
Applicant's name ..... :	WAGO Kontakttechnik GmbH & Co. KG
Address ..... :	Hansastrasse 27, 32423 Minden/Westfalen, Germany
Test specification:	
Standard ..... :	IEC 61984:2008
Test procedure ..... :	CB Scheme
Non-standard test method ..... :	N/A
Test Report Form No. ..... :	IEC61984C
Test Report Form(s) Originator .... :	VDE Prüf- und Zertifizierungsinstitut GmbH
Master TRF ..... :	Dated 2017-06

If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed.

This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.

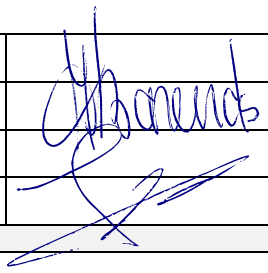
General disclaimer:

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 Issuing CB Testing Laboratory. The authenticity of this Test Report and its contents can be verified by contacting the NCB, responsible for this Test Report.

Test item description.....:	Appliance Connectors
Trade Mark.....:	WAGO
Manufacturer .....:	WAGO Kontakttechnik GmbH & Co. KG
Model/Type reference.....:	831 Series
Ratings.....:	41 A (6mm²) 57 A (10mm²) 500V~for pcb male connectors and 800V~for all other connectors without lever
	41 A (6mm²) 57 A (10mm²) 800V~for all connectors with lever

Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):

☒	**CB Testing Laboratory:**	DEKRA Certification B.V.	
Testing location/ address.....:		Meander 1051, 6825 MJ Arnhem The Netherlands	
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 1:**		
Testing location/ address.....:			
Tested by (name, function, signature).....:			
Approved by (name, function, signature)...:			
☐	**Testing procedure: CTF Stage 2:**		
Testing location/ address.....:			
Tested by (name + signature) .....:			
Witnessed by (name, function, signature)..:			
Approved by (name, function, signature)...:			
☒	**Testing procedure: CTF Stage 3:**	WAGO Kontakttechnik GmbH & Co. KG	
☐	**Testing procedure: CTF Stage 4:**		
Testing location/ address.....:		Hansastrasse 27, 32423 Minden/Westfalen, Germany	
Tested by (name, function, signature).....:		Alexander Niehaus	
Witnessed by (name, function, signature)..:		H.R.M. Barends	
Approved by (name, function, signature)...:		Christian Stendel	
Supervised by (name, function, signature) :		W. Huang	



List of Attachments (including a total number of pages in each attachment):

Summary of testing:	
Tests performed (name of test and test clause): All applicable tests	**Testing location:** WAGO Kontakttechnik GmbH & Co. KG Hansastrasse 27, 32423 Minden/Westfalen, Germany
Summary of compliance with National Differences (List of countries addressed): ☒ **The product fulfils the requirements of EN61984:2009**	
Copy of marking plate: WAGO 831	

Test item particulars ..... :	Appliance Connectors
Classification of installation and use..... :	class 0 – class 1
Supply Connection..... :	See page 28
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement ..... :	P (Pass)
- test object does not meet the requirement ..... :	F (Fail)
Testing..... :	
Date of receipt of test item ..... :	2019-08-20
Date (s) of performance of tests..... :	2019-08-20

General remarks:

"(See Enclosure #)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.

Throughout this report a ☒ comma / ☐ point is used as the decimal separator.

CTF projects are fully in line with the procedures and requirements of the IECEE CB-Scheme, but do not fall under DEKRA's ISO/IEC 17025 accreditation by the Dutch Accreditation Council.

Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided ..... :	☒ **Yes** ☐ **Not applicable**

When differences exist; they shall be identified in the General product information section.

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

Name and address of factory (ies)….:	Wago Elwag Innowacyjna 2 55-330 Wroblowice Poland Wago Elwag sp.z.o.o. ul. Piekna 58 a, 50-506, Wroclaw Poland Wago Pvt. Ltd. C-27, Sector-58, Phase III 201301 Noida Uttar Pradesh India Wago Electronic (Tianjin) Co. Ltd. No. 5 Quanhui Road Wu Qing Development Area 301700 Tianjin China Wago-Kontakttechnik GmbH & Co. KG Hansastrasse 27, 32423, Minden/Westfalen Germany WAGO Kontakttechnik GmbH &Co. KG, Werk Sondershausen Waldstrasse 1, 99706, Sondershausen Germany WAGO Contact S.A. Route de l'Industrie 19, CP 168, 1564, Domdidier Switzerland WAGO Kontakttechnik GmbH & Co. KG Cammer Strasse. 17 32423 Minden, Germany
General product information and other remarks: In this test report optional variant have been included and an additional factory location	

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
	MECHANICAL TEST GROUP A (TABLE 10)			
A1	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.2.2	Marking indelible and easily legible	◊) ♦)		P
	Minimum marking on the connector a) trademark	◊) ♦)	WAGO	P
	Markings a) trademark and b) type identification on smallest unit of packaging	◊) ♦)	a) WAGO b) 831	P
	All other markings (c – k) given in the technical documentation or catalogue of the manufacturer	◊) ♦)	technical documentation provided in catalogue	P
	c) Rated current:	◊) ♦)	41 A (6mm²) / 57A (10mm²)	P
	c) Rated voltage:	◊) ♦)	500V~for PCB male connectors and 800V~for all other connectors	P
	e) Over voltage category:	◊) ♦)	III	P
	f) Pollution degree:	◊) ♦)	Pollution degree 3	P
	g) Protection degree:	◊) ♦)	IP10/IP20	P
	h) Range of temperature:	◊) ♦)	LLT: -35 ˚C – ULT: 105 ˚C	P
	i) Type of terminals:	◊) ♦)	Screwless-type	P

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
	j) Connectable conductors:	◊)	0,5 mm² - 10 mm²	P
		♦)	0,2 mm² - 10 mm²	
	k) Reference to this standard or to the DS			N/A
6.2.3	Position for the contacts and protective earthing contacts clearly indicated. Marking of protective earthing contacts applies symbol ⏚ or "PE". This requirement is not necessary for non rewirable connectors.			N/A N/A
6.9.2	Fixing means not used to fix live parts.	◊)		P
		♦)		
6.9.3	Termination without damage possible.	◊)		P
		♦)		
6.10	CBC has adequate breaking capacity.			N/A
6.11	Free connector: Wires protected against shear and tensile stress at the termination and secured to prevent twisting.		Special design	N/A
	The above requirement does not apply to:			-
	a) free connectors for termination to cables in fixed mountings (plug connection in the sense of a detachable connection)			N/A
	b) free connectors in which the terminations are protected against pull and twisting by mounting provisions in the end-use product			N/A
	DIMENSIONAL EXAMINATION: IEC 60512			-
6.19	Clearances and creepage distances according to IEC 60664.	◊)	see table 0.2	P
		♦)		
	Connector dimensions comply with the DS or manufacturer's specification.	◊)		P
		♦)		
A2	DURABILITY OF MARKING			-
7.3.2	Test liquid: water Test piston size 1; force 5 N; 10 cycles IEC 60068-2-70 Test Xb „Abrasion of marking"	◊)	IEC 60068-2-70 Test Xb "Abrasion of marking" in the moulding	P
		♦)		

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
	Visible with the naked eye	◊)		P
		♦)		
A3	POLARISATION AND CODING: IEC 60512 / Test [13e]			
	- For unenclosed connectors (internal connections) 20 N	◊)	> 75 N	P
		♦)		
	- For enclosed connectors (external connections) 1,5 x mating force, but not higher than 80 N			N/A
6.3	Multipole connector: Contact between protective earthing contacts and live contacts is not possible by engagement.	◊)		P
		♦)		
6.9.1	Multipole connector: Polarisation prevents improper connection of mating parts.	◊)		P
		♦)		
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
	No damage likely to impair function	◊)		P
		♦)		
A4	PROVISIONS FOR EARTHING			-
6.5.1	For a CBC the earthing contact is a “first make - last break” contact.			N/A
7.3.3	No electrical contact indication between earth contact and the other contacts.			N/A
6.5.4	CONNECTION OF THE PROTECTIVE EARTH CONNECTOR			-
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
	Remove any available covers if required.			N/A
6.5.4.1	The protective conductor terminal accepts a conductor with a minimum cross-section as specified in Table 1, Column 2:	◊)	10 mm²	P
		♦)	10 mm²	
	Minimum cross- section according to Table 1	◊)	0,5 mm²	—
		♦)	0,2mm²	
6.5.4.2	With regard to design and type of construction, the protective conductor terminations are at least equivalent to the other terminations according to clause 6.:	◊)		P
		♦)		

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
A5	INTERLOCK			N/A
A6	TERMINATIONS			
6.6	Range of connectable conductor(s):	◊)	from: 0,5 mm² to: 10 mm²	—
		♦)	from: 0,2 mm² to: 10 mm²	
6.6.1 a)	Test acc. to: IEC 60352-1 Wrapped connections			N/A
6.6.1 b)	Test acc. to: IEC 60352-2 Crimped connections			N/A
6.6.1 c)	Test acc. to: IEC 60352-3 or IEC 60998-2-3 Accessible insulation displacement connections			N/A
6.6.1 d)	Test acc. to: IEC 60352-4 or IEC 60998-2-3 Non-accessible insulation displacement connections			N/A
6.6.1 e)	Test acc. to: IEC 60352-5 Press-in connections			N/A
6.6.1 f)	Test acc. to: IEC 60352-6 or IEC 60998-2-3 Insulation piercing connections			N/A
6.6.1 g)	Test acc. to: IEC 60999-1 or IEC 60999-2 or IEC 60352-7 Screwless-type clamping units	◊)	Screwless-type clamping unit with direct pressure. Test performed according IEC 60999-1	P
		♦)		
6.6.1 h)	Test acc. to: IEC 60999-1 or IEC 60999-2 Screw-type clamping units			N/A
6.6.1 i)	Test acc. to: IEC 60760 or IEC 61210 Flat, quick-connect terminations			N/A
	Test acc. to: IEC 60068-2-20 Solder terminations			N/A
	Other terminations, not mentioned above, acc. to IEC standard..... :			N/A

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
A7	CONTACT RETENTION IN INSERT: IEC 60512 Test 15a			-
	Test load shall be three times the specified insertion force (mating) of one contact or the specified insertion force of one contact plus 50 N, whichever is less. Minimum test load 20 N.	◊) ♦)	Tested with a load of > 30 N	—
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.18.2	Contacts safety retained	◊) ♦)		P
	No axial displacement likely to impair normal operation	◊) ♦)		P
A8	CABLE CLAMP: IEC 60512			N/A

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict
A9	MECHANICAL STRENGTH IMPACT (Only free Connectors and CBC): IEC 60512 Test 7b		
	Dropping cycles: 8 positions in 45° steps		—
	Dropping height	750 mm and wired with 0,5 mm² flexible conductor	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		-
6.18.1	No damage likely to impair safety		N/A
6.18.3	Internal insulations not damaged		N/A
	Parts against electric shock not damaged		N/A
	Clearances and creepage distances not reduced		N/A

	SERVICE LIFE TEST GROUP B (TABLE 11)		
B1	INITIAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b		N/A
	Reference value for subsequent measurement:	See appended table B1	—
	Test current	A	—

B2	BREAKING CAPACITY (ONLY FOR CBCs)		
7.3.5	Operating cycles		—
	Speed of insertion/ withdrawal	0,8 m/s	—
	Test voltage	V	—
	Test current	A	—
	Power factor / cos(φ)	0,9 ± 0,05	—
	Time constant	1 ms ± 15%	—
	VISUAL EXAMINATION: IEC 60512 Test 1a		-
6.14.2	No damage occurred, which could impair normal use	No damage occurs on the tested specimen.	N/A

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
B3	MECHANICAL OPERATIONS: IEC 60512 Test 9a			
7.3.9	Operating cycles	◊)	150 cycles	—
		♦)	200 cycles	
	Insertion speed	◊)	0,01 m/s	—
		♦)		
	Rest	◊)	30 s	—
		♦)		
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.14.1	No damage occurred, which could impair normal use	◊)		P
		♦)		
B4	FINAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b			
	Test current	◊)	1 A	—
		♦)		
	R2 ≤ 1,5 R1 or R2 ≤ 5 mΩ + R1	◊)	See appended table B4.1	P
		♦)		
	DIELECTRIC STRENGTH: IEC 60512 Test 4a			-
	a) Impulse withstand voltage	◊)	7,3 kV for PCB male connectors 9,8 kV for all other variants.	—
		♦)		
	b) r.m.s. withstand voltage	◊)	3,31 kV for PCB male connectors 4,26 kV for all other variants.	—
		♦)		
6.13	No breakdown or flashover occurred	◊)	See appended table B4.2	P
		♦)		
B5	BENDING (FLEXING) TEST (To be performed on new specimen)			N/A

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict
	THERMAL TEST GROUP C (TABLE 12)		
C1	TEMPERATURE RISE TEST: IEC 60512 Test 5A		-
	Test conductor length according Table 7 ◊)	250 mm	—
	Test conductor length according Table 7 ♦)	250 mm	—
	Test conductor cross-section ◊)	Cross section 6 mm²	—
	Test conductor cross-section ♦)	Cross section 6 mm² and 10 mm²	—
7.3.7	Mated specimen		—
	Test current ◊)	41 A	—
	Test current ♦)	41 A / 57A	—
	Ambient temperature – components ◊)	25 °C	—
	Ambient temperature – components ♦)	25 °C	—
	Upper limit temperature – components ◊)	105 °C	—
	Upper limit temperature – components ♦)	105 °C	—
6.16	The upper limiting temperature specified for the specimen is not exceeded ◊)	See appended table C1 (upper limiting temperature according DS: 85 °C)	P
	The upper limiting temperature specified for the specimen is not exceeded ♦)	See appended table C1 (upper limiting temperature according DS: 85 °C)	P
	CLIMATIC TEST GROUP D (TABLE 13)		
D1	INITIAL MEASUREMENTS (CONTACT RESISTANCE): IEC 60512 Test 2b		-
	Reference value for subsequent measurement . :	See appended table D1	—
	Test current ◊)	1 A	—
	Test current ♦)	1 A	—
D2	COLD: IEC 60512 Test 11j		
	Mated specimen		—
	Test duration ◊)	2 h	—
	Test duration ♦)	2 h	—
	Lower temperature limit ◊)	-35 °C	—
	Lower temperature limit ♦)	-35 °C	—

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.6.3	Sufficient contact pressure through insulation	◊)		P
		♦)		
6.8 / 6.15	No visual damage, no cracks on insulations parts likely to impair safety	◊)		P
		♦)		
6.18.3	Internal insulation shows no damage likely to impair safety	◊)		P
		♦)		
	No damage occurred, which could impair normal use	◊)		P
		♦)		
D3	DRY HEAT: IEC 60512 Test 11i			
	Mated specimen			—
	Test duration	◊)	7 days	—
		♦)		
	Upper temperature limit	◊)	+ 105 °C	—
		♦)		
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.6.3	Sufficient contact pressure through insulation	◊)		P
		♦)		
6.8 / 6.15	No visual damage, no cracks on insulations parts likely to impair safety	◊)		P
		♦)		
6.18.3	Internal insulation shows no damage likely to impair safety	◊)		P
		♦)		
	No damage occurred, which could impair normal use	◊)		P
		♦)		

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
D4	PROTECTION AGAINST CORROSION: IEC 60512 Test 11g			
7.3.14 Test 1	Flowing mixed gas corrosion according to IEC 60512-11-7, test 11g Method 1 or alternatively Method 4 (Table 1 of IEC 60512-11-7)). Test duration is 4 days.			N/A
7.3.14 Test 2 alternative	Sulphur dioxide test with general condensation of moisture according to ISO 6988 . Test duration is 24h (1 test cycle)	◊) ♦)		P
	VISUAL EXAMINATION: IEC 60512 Test 1a			-
6.21	Function guaranteed	◊) ♦)		P
	No damage occurred, which could impair normal use	◊) ♦)		P
D5	FINAL MEASUREMENT (CONTACT RESISTANCE): IEC 60512 Test 2b			
	Test current		1 A	—
	R2 ≤ 1,5 R1 or R2 ≤ 5 mΩ + R1	◊) ♦)	See appended table D5	P
D6	DIELECTRIC STRENGTH: IEC 60512 Test 4a			
	Mated specimen			—
	Impulse withstand voltage	◊) ♦)	7,3 kV for PCB male connectors 9,8 kV for all other variants.	—
	r.m.s. withstand voltage	◊) ♦)	3,31 kV for PCB male connectors 4,26 kV for all other variants.	—
6.13	No breakdown or flashover occurred	◊) ♦)	See appended table D6	P

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict
	DEGREE OF PROTECTION TEST GROUP E (TABLE 14)		
E1	PROTECTION AGAINST ELECTRIC SHOCK		-
	Unenclosed connectors (for use inside an enclosure):		-
	5.4 c1) COC classified as IP0X, no test required		-
6.4.2.2	5.4 c2) COC Hand back safety (IP1X or IPXXA) 50 mm sphere pressed with 20 N against mated specimen. No live parts accessible.	IPX0	N/A
6.4.2.3	5.4 c3) COC Finger safety (IP2X or IPXXB) ◊) Jointed test finger pressed with 20 N against mated specimen. No live parts accessible. ♦)	IPX0	P
6.4.2.3	5.4 d) CBC finger safety (IP2X or IPXXB) Jointed test finger pressed with 20 N against mated and unmated specimen. No live parts accessible.		N/A
	Enclosed connectors (COCs and CBCs)		-
6.4.1	Test at mated and unmated specimen. Jointed IEC test finger pressed with 20 N against the surface except the mating face of the male part of the connector. Creepages and clearances ensured between live parts and test finger.		N/A
	All parts necessary to ensure protection against electric shock only removable with a tool.		N/A
6.4.3	For a CBC, protection against electric shock is ensured also during insertion and withdrawal. This is proved by use of the jointed IEC test with a test force of 20 N. Creepages and clearances ensured between live parts and test finger.		N/A

E2	PROVISION FOR EARTHING		
7.3.13 6.5.3	Resistance between accessible metal parts and the earthing contact ≤ 100 mΩ..... :	mΩ	N/A

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984				
Clause	Requirement + Test		Result - Remark	Verdict
E3	DEGREE OF PROTECTION IP CODE: IEC 60529			
7.3.6.3	Tests for IP Codes higher than IP2X or IPXXB			
6.12 7.3.7.1	IP code according to IEC 60529 in mated condition or according manufacturers conditions..... :		IP10 resp. IP20	—
	Maximum and minimum cross-section wiring or cable diameter connected..... :		10 mm² / ∅ mm 0,5 mm² / ∅ mm	—
7.3.7.2	Protection against ingress of foreign solid objects, tested according to IEC 60529	◊)	IP10 resp. IP20	P
		♦)		
7.3.7.3	Protection against harmful ingress of water, tested according to IEC 60529	◊)	IP10 resp. IP20	P
		♦)		

Note: ◊) 831 connectors without lever
♦) 831 connectors with lever

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

A8.1	**TABLE: Covers mounted / contacts not connected**				N/A
Nominal size (mm):	∅ [mm]		Tensible force [N]	Displacement [mm]	—
	Min.			≤	N/A
	Max.				
	Min.			≤	N/A
	Max.				
	Min.			≤	N/A
	Max.				

A8.2	**TABLE: Covers mounted**				N/A
Nominal size (mm):	∅ [mm]		Torque [Nm]	Twist [°]	—
	Min.			≤ ±	N/A
	Max.				
	Min.			≤ ±	N/A
	Max.				
	Min.			≤ ±	N/A
	Max.				

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B1	**TABLE: Initial measurements (Contact resistance)**					**P**
Test current.....:				1 A (cross-sectional: 6 mm²)		—
Test sample	Contact	1	2	3	4	—
30398-04	U1 [mV]	0,525	0,555	0,51	0,47	**P**
	R1 [mΩ]	0,525	0,555	0,51	0,47	
	Contact	1	2	3	4	—
30398-05	U1 [mV]	0,45	0,50	0,45	0,51	**P**
	R1 [mΩ]	0,45	0,50	0,45	0,51	
	Contact	1	2	3	4	—
30398-06	U1 [mV]	0,43	0,49	0,48	0,49	**P**
	R1 [mΩ]	0,43	0,49	0,48	0,49	
supplementary information: Wire to board connectors with lever						

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B4.1	**TABLE: Final measurements (Contact resistance)**					P
Test current.....:				1 A		—
Number of cycles .....:				200		—
Condition.....:				R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1		—
Test sample	Contact	1	2	3	4	—
30398-04	R2max [mΩ]	5,525	5,555	5,51	5,47	P
	ΔU2 [mV]	0,065	0,625	0,31	0,245	
	R2 [mΩ]	0,59	1,18	0,82	0,715	
	Contact	1	2	3	4	—
30398-05	R2max [mΩ]	5,45	5,50	5,45	5,51	P
	ΔU2 [mV]	0,21	0,255	0,755	0,3	
	R2 [mΩ]	0,66	0,755	1,0205	0,81	
	Contact	1	2	3	4	—
30398-06	R2max [mΩ]	5,43	5,49	5,48	5,49	P
	ΔU2 [mV]	0,92	0,62	0,785	0,57	
	R2 [mΩ]	1,35	1,11	1,265	1,06	
supplementary information: Wire to board connectors with lever						

B1	**TABLE: Initial measurements (Contact resistance)**					P
Test current .....:				1 A (cross-sectional: 6 mm²)		—
Test sample	Contact	1	2	3	4	—
1	U1 [mV]	0,45	0,54	0,47	0,56	P
	R1 [mΩ]	0,45	0,54	0,47	0,56	
	Contact	1	2	3	4	
2	U1 [mV]	0,46	0,59	0,49	0,51	P
	R1 [mΩ]	0,46	0,59	0,49	0,51	
	Contact	1	2	3	4	
3	U1 [mV]	0,44	0,58	0,49	0,52	P
	R1 [mΩ]	0,44	0,58	0,49	0,52	
supplementary information: Wire to board connectors without lever						

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B4.1	**TABLE: Final measurements (Contact resistance)**					P
Test current.....:		1 A				—
Number of cycles .....:		150				—
Condition.....:		R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1				—
Test sample	Contact	1	2	3	4	—
1	R2max [mΩ]	0,45	0,54	0,47	0,56	P
	ΔU2 [mV]	1,06	2,37	2,22	0,48	
	R2 [mΩ]	1,51	2,91	2,69	1,04	
	Contact	1	2	3	4	—
2	R2max [mΩ]	0,46	0,59	0,49	0,51	P
	ΔU2 [mV]	0,3	3,44	3,87	2,49	
	R2 [mΩ]	0,76	4,03	4,36	3,00	
	Contact	1	2	3	4	—
3	R2max [mΩ]	0,44	0,58	0,49	0,52	P
	ΔU2 [mV]	3,94	0,47	1,65	0,41	
	R2 [mΩ]	4,38	1,05	2,14	0,93	
supplementary information: Wire to board connectors without lever						

B1	**TABLE: Initial measurements (Contact resistance)**					P
Test current ..... :		1 A (cross-sectional: 6 mm²)				—
Test sample	Contact	1	2	3	4	—
1	U1 [mV]	0,78	0,69	0,76	0,71	P
	R1 [mΩ]	0,78	0,69	0,76	0,71	
	Contact	1	2	3	4	
2	U1 [mV]	1,00	0,65	0,89	0,80	P
	R1 [mΩ]	1,00	0,65	0,89	0,80	
	Contact	1	2	3	4	
3	U1 [mV]	0,79	0,98	0,77	0,76	P
	R1 [mΩ]	0,79	0,98	0,77	0,76	
supplementary information: Wire to wire connectors without lever						

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B4.1	**TABLE: Final measurements (Contact resistance)**					P
Test current.....:				1 A		—
Number of cycles .....:				200		—
Condition.....:				R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1		—
Test sample	Contact	1	2	3	4	—
1	R2max [mΩ]	5,78	5,69	5,76	5,71	P
	ΔU2 [mV]	0,10	0,17	0,27	0,13	
	R2 [mΩ]	0,88	0,86	1,03	0,84	
	Contact	1	2	3	4	—
2	R2max [mΩ]	6,00	5,56	5,89	5,80	P
	ΔU2 [mV]	0,10	0,25	0,27	0,19	
	R2 [mΩ]	1,10	0,90	1,16	0,99	
	Contact	1	2	3	4	—
3	R2max [mΩ]	5,79	5,98	5,77	5,76	P
	ΔU2 [mV]	0,32	0,1	0,42	0,40	
	R2 [mΩ]	1,11	1,08	1,19	1,16	
supplementary information: Wire to wire connectors without lever						

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

B4.2	**TABLE: Dielectric strength (mated specimen)**		
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact (mated specimen)	7,3 kV	3,31 kV	No
supplementary information: Wire to board connectors with lever			

B4.2	**TABLE: Dielectric strength**		
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact	9,8 kV	4,26 kV	No
supplementary information: Wire to board connectors with lever			

B4.2	**TABLE: Dielectric strength (mated specimen)**		P
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact	7,3 kV	3,31 kV	No
Contact - Earth			
Contact - Surface			
supplementary information: Wire to board connectors without lever			

B4.2	**TABLE: Dielectric strength (mated specimen)**		P
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact	9,8 kV	4,26 kV	No
Contact - Earth			
Contact - Surface			
supplementary information: Wire to wire connectors without lever			

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

C1	**TABLE: Temperature rise test**				P
	Ambient temperature (°C) ..... :	25			—
Thermocouple Locations		Test current (A)	Upper temperature limit (ULT) (°C)	Temperature measured (°C)	—
Current bar (wire to board) 6 mm²		41	105	51	P
Current bar (wire to board) 10 mm²		57	105	57	P
supplementary information: connectors with lever					

C1	**TABLE: Temperature rise test**				P
	Ambient temperature (°C) ..... :	25			—
Thermocouple Locations		Test current (A)	Upper temperature limit (ULT) (°C)	Temperature measured (°C)	—
Current bar (wire to board) 6 mm²		41	105	51	P
Current bar (wire to wire) 6 mm²		41	105	45	P
supplementary information: N/A					

D1	**TABLE: Initial measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Test sample	Contact	1	2	3	4	—
1	U1 [mV]	0,495	0,49	0,625	0,525	P
	R1 [mΩ]	0,495	0,49	0,625	0,525	
supplementary information: Wire to wire connectors with lever						

D5	**TABLE: Final measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Condition ..... :		R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1				—
Test sample	Contact	1	2	3	4	—
1	R2max [mΩ]	5,495	5,49	5,625	5,525	P
	ΔU2 [mV]	0,095	0,06	0,005	0,005	
	R2 [mΩ]	0,59	0,55	0,62	0,52	
supplementary information: wire to wire connectors with lever						

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Clause	Requirement + Test	Result - Remark	Verdict

D6	**TABLE: Dielectric strength (mated specimen)**			
Test voltage applied between:		a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact		9,8 kV	4,26 kV	No
Contact - Earth				
Contact - Surface				
supplementary information: wire to wire connectors with lever				

D1	**TABLE: Initial measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Test sample	Contact	1	2	3	4	—
1	U1 [mV]	0,54	0,58	0,56	0,53	P
	R1 [mΩ]	0,54	0,58	0,56	0,53	
supplementary information: Wire to board connectors without lever						

D5	**TABLE: Final measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Condition ..... :		R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1				—
Test sample	Contact	1	2	3	4	—
1	R2max [mΩ]	5,54	5,58	5,56	5,53	P
	ΔU2 [mV]	0,04	0,10	0,04	0,04	
	R2 [mΩ]	0,50	0,48	0,52	0,49	
supplementary information: wire to board connectors without lever						

D6	**TABLE: Dielectric strength (mated specimen)**			
Test voltage applied between:		a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact		7,3 kV	3,31 kV	No
Contact - Earth				
Contact - Surface				
supplementary information: wire to board connectors without lever				

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

D1	**TABLE: Initial measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Test sample	Contact	1	2	3	4	—
1	U1 [mV]	0,72	1,11	1,06	0,99	P
	R1 [mΩ]	0,72	1,11	1,06	0,99	
supplementary information: Wire to wire connectors without lever						

D5	**TABLE: Final measurements (Contact resistance)**					P
Test current ..... :		1 A				—
Condition ..... :		R2max ≤ 1,5R1 or R2max ≤ 5 mΩ + R1				—
Test sample	Contact	1	2	3	4	—
1	R2max [mΩ]	5,72	6,11	6,06	5,99	P
	ΔU2 [mV]	0,03	0,33	0,17	0,18	
	R2 [mΩ]	0,75	0,78	0,89	0,81	
supplementary information: wire to wire connectors without lever						

D6	**TABLE: Dielectric strength (mated specimen)**		
Test voltage applied between:	a) Impulse withstand voltage applied	b) r.m.s withstand voltage applied	Breakdown / flashover (Yes/No)
Contact - Contact	9,8 kV	4,26 kV	No
Contact - Earth			
Contact - Surface			
supplementary information: wire to wire connectors without lever			

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**	
Example ..... :	X	Please mark relevant line with "X"
Kind of equipment	X	Connector without breaking capacity (COC)
		Connector with breaking capacity (CBC)
Existence of an enclosure	X	Unenclosed connector
		Enclosed connector
Design of the connector	X	Fixed connector
		Free connector
Additional characteristics	X	Connector with protective earthing contact
		Connector without protective earthing contact
		Connector with cable clamp
	X	Connector without cable clamp
		Connectors (COC) with protection against electric shock for hand back safety, when mated
		Connectors (COC) with protection against electric shock for finger safety
		CBC with protection against electric shock for finger safety, both in mated and unmated condition
	X	Degree of protection of a connector
		Connector for class II equipment
		Connector with interlock
	X	Connector without interlock
		Non-rewirable connector
	X	Rewirable connector
Pollution degree		1
		2
	X	3
		4
Over voltage category		I
		II
	X	III
		IV

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**	
Operating cycles		10
		50
		100
		500
		1000
		2000
		5000
	X	According manufacturer's: 150 CYCLES for connectors without lever 200 CYCLES for connectors with lever
Bendings		10
		50
		100
		500
		1000
		2000
		5000
		20000
		According manufacturer's:
Upper temperature limit		70°C
		85°C
		100°C
		125°C
	X	According manufacturer's: 105°C
Lower temperature limit		-10°C
		-25°C
		-40°C
		-55°C
		0°C
	X	According manufacturer's: -35°C

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.1	**TABLE: Characteristic features**		
Type of conductor		X	Solid
		X	Flexible
Termination and connection			Wrapped connection
			Crimped connection
			IDC Accessible
			IDC Non-accessible
			Press in connections
			Insulation piercing connections
		X	Solder termination
		X	Screwless-type clamping units
			Screw-type clamping units
			Flat, quick-connect terminations
			According manufacturer's:
Values for cable clamp			[4–9 mm]
			[9-12 mm]
			[12-20 mm]
			[20-32 mm]
			[33-42 mm]
			[≥ 42 mm]
		X	According manufacturer's: 5 mm – 16,5 mm
Rated voltage(s)..... :	500V~for PCB male connectors and 800V~for all other connectors		
Rated current ..... :	41 A (57A)		
Rated impulse voltage(s) ..... :	8 kV or 6 kV		
Rated insulation voltage(s) ..... :	800 V (500V for PCB male connectors)		
Number of poles ..... :	2 - 9		
Protection degree (IP-Code) .... :	IP10/IP20		
Mounting ..... :	N/A		
Wire cross section area or cross section range ..... :	0,5mm² - 6 (10) mm² for connectors without lever 0,2mm² - 6 (10) mm² for connectors with lever		
Material and coating of female contact ..... :	Plated copper alloy		
Material and coating of male contact:	Plated copper alloy		

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.2	TABLE: Clearance and creepage distance measurements				
Type / Shell-size / etc. ..... :	831 without lever	831 PCB male	831 with lever		
Rated voltage [V] ..... :	800	500	800		
Pollution degree ..... :	3	3	3		
Isolation material group ..... :	1	1	1		
Impulse withstand voltage [kV] :	8	6	8		
Test voltage [kV] ..... :	9,8	7,3	9,8		
Clearances required ..... :	8.0	> 6.0	8.0		
Clearances measured ..... :	> 8.0	6.6	> 8.0		
Creepage distances required ... :	10,5	10,5	10,5		
Creepage distances measured :	> 10,5	> 10,5	> 10,5		
Supplementary information: N/A					

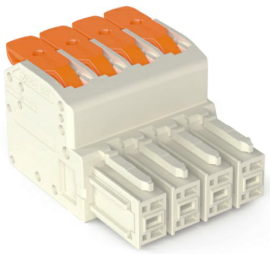
0.3.1	TABLE: IEC 60112 / Tracking test						
Specimen				Erosion depth [mm]			
Part	Material	Material-thickness [mm]	Colour	PTI Test solution [A]	CTI	PTI Test solution [B]	Result
base	V0	0,4	All	600	600	-	P
Supplementary information: N/A							

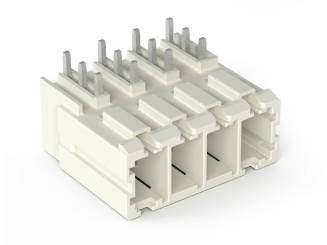
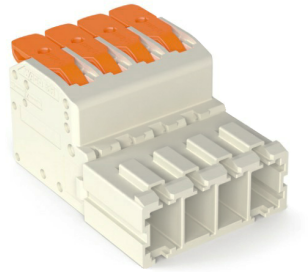
0.3.2	TABLE: IEC 60695-2-11 / Glow-wire-test [60 s]								
Specimen				Flame					
Part	Material	Material-thickness [mm]	Colour	[°C]	Start [s]	End [s]	Height [mm]	Ignition of tissue paper	Result
base	V0	0,4	All	960	1	60	10	-	P
Supplementary information: N/A									

IEC 61984			
Clause	Requirement + Test	Result - Remark	Verdict

0.3.3	**TABLE: IEC 89/336/CD / Ball-pressure test**						
Specimen				Ball-pressure test			
Part	Material	Material-thickness [mm]	Colour	[C°]	Measured [mm]	Required [mm]	Result
base	V0	0,4	all	125	0,6	< 2	P
Supplementary information: N/A							

0.3.4	**TABLE: IEC 60695-2-2 / Needle-flame test**						
Specimen				Flame			
Part	Material	Material-thickness [mm]	Colour	Burning duration [s]	Start [s]	End [s]	Result
base	V0	0,4	all	-	-	-	P
Supplementary information: N/A							

Series 831		
	Description	**Item Number**
	Female connector without lever	831-3102 2 poles 831-3103 3 poles 831-3104 4 poles 831-3105 5 poles 831-3106 6 poles 831-3107 7 poles 831-3108 8 poles 831-3109 9 poles
	Female connector with levers	831-1102 2 poles 831-1103 3 poles 831-1104 4 poles 831-1105 5 poles 831-1106 6 poles 831-1107 7 poles 831-1108 8 poles 831-1109 9 poles
	Male Headers with straight solder pins	831-3602 2 poles 831-3603 3 poles 831-3604 4 poles 831-3605 5 poles 831-3606 6 poles 831-3607 7 poles 831-3608 8 poles 831-3609 9 poles
	Male Headers with angled solder pins	831-3622 2 poles 831-3623 3 poles 831-3624 4 poles 831-3625 5 poles 831-3626 6 poles 831-3627 7 poles 831-3628 8 poles 831-3629 9 poles

Series 831		
	Description	**Item Number**
	Male Headers with angled solder pins	831-3642 2 poles 831-3643 3 poles 831-3644 4 poles 831-3645 5 poles 831-3646 6 poles 831-3647 7 poles 831-3648 8 poles 831-3649 9 poles
	Male connector without lever	831-3202 2 poles 831-3203 3 poles 831-3204 4 poles 831-3205 5 poles 831-3206 6 poles 831-3207 7 poles 831-3208 8 poles 831-3209 9 poles
	Male connector with lever	831-1202 2 poles 831-1203 3 poles 831-1204 4 poles 831-1205 5 poles 831-1206 6 poles 831-1207 7 poles 831-1208 8 poles 831-1209 9 poles

Optional suffixes not affecting electrical properties:

Suffixes may be added to the Catalogue numbers, to denote color variants, printing variants, locking or fixing devices, fixing plates or strain relief, DIN 35-rail mounting, snap-in mounting feet, different contact length, optional silver plating and other mechanical variations not affecting the relevant properties.

Item numbers may be denoted with or without leading zeroes e.g. 0831-3105 or 831-3105.