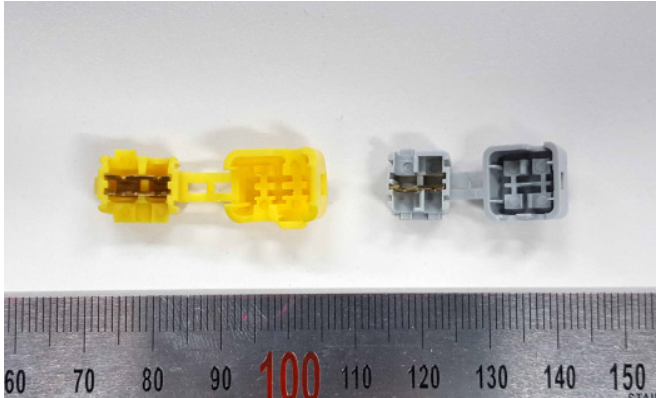


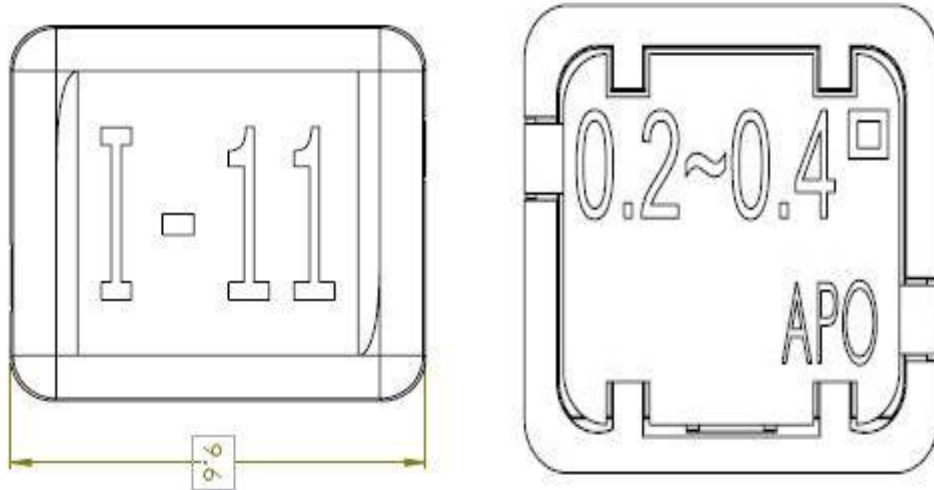
Prüfbericht - Nr.: <i>Test Report No.:</i>	50218971 001	Auftrags-Nr.: <i>Order No.:</i>	156101163	Seite 1 von 42 <i>Page 1 of 42</i>
Kunden-Referenz-Nr.: <i>Client Reference No.:</i>	690970	Auftragsdatum.: <i>Order date.:</i>	15.01.2019	
Auftraggeber: <i>Client:</i>	ALPHA O Co., Ltd. #404, Hanam Venture Center, 239, Geomdansen-ro, Hanam-si, Gyeonggi-do, 13023 Rep. of Korea			
Prüfgegenstand: <i>Test item:</i>	Non-Striping Extended Connector			
Bezeichnung / Typ-Nr.: <i>Identification / Type No.:</i>	I-11, I-22, T-11, T-21, T-31, T-22, T-32, IT-33, IT-43, IT-44, IT-54, IT-55 ¹⁾			
Auftrags-Inhalt: <i>Order content:</i>	LVD testing for CE marking			
Prüfgrundlage: <i>Test specification:</i>	EN 60998-2-3:2004 EN 60998-1:2004			
Wareneingangsdatum: <i>Date of receipt:</i>	15.01.2019			
Prüfmuster-Nr.: <i>Test sample No.:</i>	Proto type			
Prüfzeitraum.: <i>Testing period:</i>	15.01.2019 – 25.01.2019			
Or der Prüfung: <i>Place of testing:</i>	Standard Labs			
Prüflaboratorium: <i>Testing laboratory:</i>	TÜV Rheinland Korea Ltd.			
Prüfergebnis*: <i>Test Result*:</i>	Pass			
geprüft von / tested by:		kontrolliert von / reviewed by:		
25.01.2019	Hyun-Sung Park / Test Engineer	25.01.2019	Chang-Gyu Lee / Reviewer	
Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>	Unterschrift <i>Signature</i>	Datum <i>Date</i>	Name/Stellung <i>Name/Position</i>
				Unterschrift <i>Signature</i>
Sonstiges/ Other: 1) See page 4 detail.				
Zustand des Prüfgegenstandes bei Anlieferung: <i>Condition for the test item at delivery:</i>		Prüfmuster vollständig und undbeschädigt <i>Test item complete and undamaged</i>		
* Legende: 1 = sehr gut 2 = gut 3 = befriedigend 4 = ausreichend 5 = mangelhaft P(ass) = entspricht o.g. Prüfgrundlage(n) F(ail) = entspricht nicht o.g. Prüfgrundlage(n) N/A = nicht anwendbar N/T = nicht getestet Legend: 1 = very good 2 = good 3 = satisfactory 4 = sufficient 5 = poor P(ass) = passed a.m. test specification(s) F(ail) = failed a.m. test specification(s) N/A = not applicable N/T = not tested				
Dieser Prüfbericht bezieht sich nur auf das o.g. Prüfmuster und darf ohne Genehmigung der Prüfstelle nicht auszugsweise vervielfältigt werden. Dieser Bericht berechtigt nicht zur Verwendung eines Prüfzeichens. <i>This test report relates to the a. m. test sample. Without permission of the test center this test report is not permitted to be duplicated in extracts. This test report does not entitle to carry any test mark.</i>				

V04

TEST REPORT IEC 60998-2-3 Connecting devices for low voltage circuits for household and similar purposes Part 2-3: Particular requirements for connecting devices as separate entities with insulation-piercing clamping units	
Report Number.	50218971 001
Date of issue	See cover page
Total number of pages	See cover page
Name of Testing Laboratory preparing the Report	
Applicant's name	ALPHAO Co., Ltd.
Address	#404, Hanam Venture Center, 239, Geomdansen-ro, Hanam-si, Gyeonggi-do, 13023 Rep. of Korea
Test specification:	
Standard	IEC 60998-2-3:2002 (see also IEC 60998-1:2002)
Test procedure	CB Scheme
Non-standard test method	N/A
Test Report Form No.	IEC60998_2_3A
Test Report Form(s) Originator	DEKRA Certification B.V.
Master TRF	Dated 2017-03
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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 :	Non-Striping Extended Connector	
Trade Mark :		
Manufacturer	ALPHAO Co.,Ltd.	
Model/Type reference	I-11, I-22, T-11, T-21, T-31, T-22, T-32, IT-33, IT-43, IT-44, IT-54, IT-55	
Ratings	See page 4	
Responsible Testing Laboratory (as applicable), testing procedure and testing location(s):		
☐	CB Testing Laboratory:	
Testing location/ address :		
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:	
☐	Testing procedure: CTF Stage 4:	
Testing location/ address :		
Tested by (name, function, signature) :		
Witnessed by (name, function, signature) . :		
Approved by (name, function, signature) ... :		
Supervised by (name, function, signature) :		

Product Specification:				
Model	Rated connecting capacity(mm2)		Rated insulation voltage(V)	
	stranded	Solid		
I-11	0.2 – 0.4	N/A	AC 250V	
T-11				
T-21				
T-31				
I-22	0.5 – 0.75	N/A		
T-22				
T-32				
IT-33	1.0 – 1.5	1.0 – 1.5		
IT-43				
IT-44	2.0 – 2.5	2.0 – 2.5		
IT-54				
IT-55	3.5 – 4.0	3.5 – 4.0		
Summary of testing:		Testing location:		
1. Clamping securement and damage to the conductor test (10.106)		Standard Labs		
2. Pull-out test on IPCDs designed for single-core conductors (10.107.1)		401, 46, LS-ro, 91beon-gil, Dongan-gu, Anyang,		
3. Connectable conductors specified by the manufacturer (11.6)		Gyeonggi-do 431-080 Rep. of Korea		
4. Insulation resistance (13.3)				
5. Electric strength test (13.4)				
6. Temperature-cycling test (15.101.1, 15.102.1)				
Short-time withstand current test (15.102.2)				
7. Ball pressure test of insulating materials (16.3)				
8. Glow-wire test (18)				
9. Resistance to tracking (19)				
Test Sample> I-11, I-22, IT-33, IT-44, IT55				



Test item particulars..... :	
Number of terminals.....	☒ single ☐ multiway
Function.....	☐ junction ☐ tapping ☒ junction and tapping
Protection against electric shock.....	☐ with ☒ without
Means of fixing.....	☐ with ☒ without
Rated temperature.....	☒ without T marking ☐ with T marking (°C):
IP number.....	IP 00
Reusability and removability.....	☐ reusable ☐ non-reusable ☒ non-removable
Method of making the connection.....	☐ general purpose tool ☒ special tool ☐ by hand
Conductor type.....	☐ rigid solid ☒ rigid (solid or stranded) ☐ flexible ☐ rigid (solid and/or stranded) and flexible
Conductor insulation.....	☒ conductors according to IEC 60227 ☐ conductors according to IEC 60245 ☐ special conductors:
Number of cores in the conductor to be connected.....	☒ one core conductors ☐ multicore cables or cords
Classification of installation and use..... N/A	
Supply Connection..... N/A	
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..... 15.01.2019	
Date (s) of performance of tests..... 15.01.2019 – 25.01.2019	

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.	
Manufacturer's Declaration per sub-clause 4.2.5 of IEC 60998-2:	
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.	
Name and address of factory (ies) Same as Applicant	

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
8	MARKING		-
8.1	On main part:		-
	a) rated connecting capacity (mm ²)	See page 2	P
	b) rated insulation voltage (V)	See page 2	P
	c) T marking (°C) (if > 40 °C).....		N/A
	d) type reference.....	See page 5	P
	e) manufacturer's or responsible vendor's name or trade mark or identification mark.....	See page 5	P
	f) IP (if > IP20)	-	N/A
	Very small devices: only d) and e) need to be indicated on the device (all marks specified are visible on the smallest package unit)		P
8.2	Multiway terminal devices: required marking is complete on at least two adjacent devices		N/A
8.3	Correct symbols		P
8.4	Marking: durable and easily legible; 15 s water; 15 s petroleum spirit		P
8.101	Marking indicated on the smallest package unit:		-
	IPCD non-reusable		N/A
	IPCD non-removable		P
	Connection and disconnection procedure		P
	Combinations of cross-sectional areas and types of conductors		P
8.102	IPCDs classified according to 7.103:		-
	Type of acceptable conductor "s" or "sol", "r", "f"	r type	P
	This marking appear on the end product or on the smallest package unit or in technical information and/or catalogues	On the catalogues	P
9	PROTECTION AGAINST ELECTRIC SHOCK		-
	Live parts of connecting devices with protection against electric shock are not accessible		P
10	CONNECTION OF CONDUCTORS		-
	Connecting devices allow correct connection of conductors		P

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
10.101	IPCD accept one or more unprepared conductors, as declared by the manufacturer		P
10.102	Relationship between rated connecting capacity of clamping units and connectable conductors (Table 101):		P
	Rated connecting capacity (mm ²)	See page 4	P
	Solid connectable conductor (mm ²)		N/A
	Stranded connectable conductor (mm ²)		N/A
	Flexible connectable conductor (mm ²)		N/A
10.103	Disconnection of a conductor from a reusable or non-reusable IPCD requires an operation other than a pull on the conductor only		N/A
	Deliberate action to disconnect the conductor by hand or with a suitable tool is necessary to take		N/A
10.104	IPCD is adequately locked against unintended loosening		P
10.105	Test for IPCD where screws for wire connection are used	See appended table 10.105	N/A
	During the test reusable IPCD is not damaged		N/A
10.106	Test for IPCD designed for use with single-core conductors (apparatus shown in Figure 101)	See appended table 10.106	P
	During the test: conductor neither slip out nor break near the clamping unit		P
	During the test reusable and non-reusable IPCD did not damage the conductor		N/A
10.107	Pull-out test:		P
10.107.1	IPCDs designed for single-core conductors	See appended table 10.107.1	P
	During the test: conductor did not slip out of the IPCD		P
10.107.2	IPCDs designed for multi-core conductors	See appended table 10.107.2	N/A
	During the test: cable or cord did not slip out of the IPCD		N/A
11	CONSTRUCTION		-
11.1	Constructional requirements given in Part 2-3		P
11.2	Clamping units clamp the conductors reliably and between metal surfaces, with exception of specific cases subject to requirements of the relevant Part 2-3		P
11.3	Subclause 11.3 of IEC/EN 60998-1 not applicable		-

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
11.4	Insulating lining, barriers and the like have adequate mechanical strength and are secured in a reliable manner		P
11.5	Current-carrying parts are of metal having adequate characteristics for their intended use; type of metal.....:		P
	Current-carrying parts subjected to mechanical wear are not made of steel provided with an electroplated coating	Copper alloy (C2680)	P
	Metals showing a large difference of electrochemical potential are not used under moist conditions		P
11.6	Terminals accept the connection of conductors as specified by the manufacturer	See appended table 11.6	P
11.7	Fixing means of bases do not serve any other purpose		N/A
11.101	IPCDs where the contact pressure is transmitted via insulating material other than ceramic are stable under normal conditions of use		P
	IPCDs transmitting contact pressure via metal parts: compliance checked by test of 15.101		P
	IPCDs using material other than metal for the transmission of contact-pressure: compliance checked by test of 15.102		N/A
11.102	Screws for making contact-pressure do not serve to fix any other component, although they may hold the IPCD in place or prevent it from turning		N/A
	Screws are not of soft metal or liable to creep		N/A
11.103	Non-reusable IPCD is designed and constructed that it is automatically destroyed when removed from the conductor and the damage is obvious		N/A
11.104	IPCD makes a reliable mechanical connection		P
12	RESISTANCE TO AGEING, TO HUMIDITY CONDITIONS, TO INGRESS OF SOLID OBJECTS AND TO HARMFUL INGRESS OF WATER		-
12.1	Connecting devices with insulating material other than ceramic and thermosetting material are resistant to ageing (168 h)		P
	Ageing temperature (°C).....:	☒ 70 ☐ T + 30 =	-
	Samples show no cracks visible nor the material have become sticky or greasy; no damage		P

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
12.2	Connecting devices protected against humid conditions (humidity treatment with a relative humidity between 91 % and 95 %)		P
	Test duration (h): ☒ 48 ☐ 168		-
	After the test samples show no damage		P
12.3	IP test (IEC 60529):		P
	Electric strength test as specified in 13.4		P
	Water has not entered to any appreciable extent and has not reached live parts		P
13	INSULATION RESISTANCE AND ELECTRIC STRENGTH		-
13.1	Insulated connecting devices provided with adequate insulation resistance and electric strength		P
13.2	Insulation between the connected conductors and the external surface is adequate for all the combinations of conductors		P
13.3	Insulation resistance measured 1 min after application of 500 V d.c.	See appended table 13.3	P
13.4	Electric strength test	See appended table 13.4	P
14	MECHANICAL STRENGTH		-
14.1	Connecting devices have adequate mechanical strength		P
14.2	Tumbling barrel according to IEC 60068-2-32 for connecting devices having a mass < 50 g (50 falls)		P
	Test torque for screws, if any (Nm).....: -		N/A
	After the test samples show no damage		P
	Samples show no damage		P
14.3	Pendular hammer according to IEC 60068-2-75 for connecting devices having a mass ≥ 50 g (10 blows)		P
	Test torque for fixing screws of bases and covers:		-
	- height of fall: 7,5 cm		N/A
	- height of fall: 10 cm		N/A
	- height of fall: 20 cm		N/A
	- height of fall: 25 cm		P
	After the test: samples show no damage and live parts have not become accessible		P

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
15	TEMPERATURE RISE AND ELECTRICAL PERFORMANCES		-
15.1 to 15.4	Temperature rise test	See appended table 15	P
15.101	Test for IPCDs transmitting contact pressure via metal parts, which can accept:		P
	- solid types of conductors only (6 samples)		N/A
	- rigid types of conductors only (6 samples)	See page 2	P
	- flexible conductors only (6 samples)		N/A
	- all types of conductors (12 samples)		N/A
	After the test: inspection show no changes impairing further use		P
15.101.1	Test A: 192 temperature cycles test, each cycle with a duration of 1 h, with the test current as defined in Table 2 of Part I	See appended table 15.101.1	P
	Cabinet temperature (°C): ☒ 40 ☐ T-marking:		-
	Maximum voltage drop did not exceed 22,5 mV or 1,5 times 24 th cycle value		P
15.101.2	Test B (alternative): 192 temperature cycles test, each cycle with a duration of 1 h, with a current to obtain an adequate temperature environment	See appended table 15.101.2	N/A
	Temperature as close as possible to the clamping unit and the conductor interface (°C): ☐ 40 ☐ >40:		-
	Maximum voltage drop did not exceed 22,5 mV or 1,5 times 24 th cycle value		N/A
15.102	Tests for IPCDs transmitting contact pressure via insulating parts, which can accept:		P
	- solid types of conductors only (6 samples)		N/A
	- rigid types of conductors only (6 samples)		P
	- flexible conductors only (6 samples)		N/A
	- all types of conductors (12 samples)		N/A
	After the test: inspection show no changes impairing further use		P
15.102.1	Test A: 384 temperature cycles test, each cycle with a duration of 1 h, with the test current as defined in Table 2 of Part I	See appended table 15.102 (Test A)	P
	Cabinet temperature (°C): ☒ 40 ☐ T-marking:		P
	Maximum voltage drop did not exceed 22,5 mV or 1,5 times 48 th cycle value		P

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
	Test B (alternative): 384 temperature cycles test, each cycle with a duration of 1 h, with a current to obtain an adequate temperature environment	See appended table 15.102 (Test B)	N/A
	Temperature as close as possible to the clamping unit and the conductor interface (°C): ☐ 40 ☐ >40:		N/A
	Maximum voltage drop did not exceed 22,5 mV or 1,5 times 48 th cycle value		N/A
15.102.2	Short-time withstand current test	See appended table 15.102.2	P
	Voltage drop after short-time withstand current test did not exceed 1,5 times the value measured before the test		P
	After the test: inspection show no changes impairing further use		P
16	RESISTANCE TO HEAT		-
16.1	Connecting devices are sufficiently resistant to heat		P
16.2	Heating cabinet test	See appended table 16.2	P
	After the test: no changes impairing further use and markings still legible		P
16.3	Ball-pressure test (IEC 60695-10-2) for parts necessary to retain current-carrying parts and parts of the earthing circuit in position	See appended table 16.3A	P
	Impression diameter not exceed 2 mm		P
	Ball-pressure test (IEC 60695-10-2) for parts not necessary to retain current-carrying parts and parts of the earthing circuit in position	See appended table 16.3B	P
	Impression diameter not exceed 2 mm		P
17	CLEARANCES AND CREEPAGE DISTANCES		-
	Creeper distances, clearances and distances through sealing compound	See appended table 17	N/A
18	RESISTANCE OF INSULATING MATERIAL TO ABNORMAL HEAT AND FIRE		-
	Glow-wire test (clauses 4 to 10 of IEC 60695-2-10)	See appended table 18	P
	No visible flames and no sustained glowing or flame and glowing extinguished within 30 s		P
	No ignition of the tissue paper or scorching of the board		P

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict

19	RESISTANCE OF INSULATING MATERIAL TO TRACKING		-
	Tracking test (IEC 60112): PTI 175 V, 50 drops, solution A	See appended table 19	P

20	EMC REQUIREMENTS		-
20.1	Immunity		N/A
20.2	Emission		N/A

10.105	TABLE: Test on screws for wire connection					N/A
	Model/type reference					
Cross-sectional area (mm ²)	Conductor type	Diameter of thread (mm)	Column number (I, II, III, IV or V)	Number of tightening (1 or 5)	Applied torque (Nm)	
Supplementary information:						

10.106	TABLE: Clamping securement and damage to the conductor test					P
	Model/type reference.....			I-11		
	Torque (Nm).....					N/A
No of sample	Conductor cross-sectional area (mm ²)	Conductor type	Mass for conductor (kg)	Height H (mm)	Diameter of bushing hole (mm)	
1	0.2	stranded	0.2	260	6.4	
2	0.2	stranded	0.2	260	6.4	
3	0.2	stranded	0.2	260	6.4	
4	0.4	stranded	0.3	260	6.5	
5	0.4	stranded	0.3	260	6.5	
6	0.4	stranded	0.3	260	6.5	
Supplementary information:						

IEC 60998-2-3						
Cl.	Requirement - Test			Result - Remark		Verdict
10.106	TABLE: Clamping securement and damage to the conductor test					P
	Model/type reference.....:			I-22		
	Torque (Nm).....:					N/A
No of sample	Conductor cross-sectional area (mm²)	Conductor type	Mass for conductor (kg)	Height H (mm)	Diameter of bushing hole (mm)	
1	0.5	stranded	0.3	260	6.5	
2	0.5	stranded	0.3	260	6.5	
3	0.5	stranded	0.3	260	6.5	
4	0.75	stranded	0.4	260	6.5	
5	0.75	stranded	0.4	260	6.5	
6	0.75	stranded	0.4	260	6.5	
Supplementary information:						

10.106	TABLE: Clamping securement and damage to the conductor test					P
	Model/type reference.....:			IT-33		
	Torque (Nm).....:					N/A
No of sample	Conductor cross-sectional area (mm ²)	Conductor type	Mass for conductor (kg)	Height H (mm)	Diameter of bushing hole (mm)	
1	1.0	stranded, solid	0.4	260	6.5	
2	1.0	stranded, solid	0.4	260	6.5	
3	1.0	stranded, solid	0.4	260	6.5	
4	1.5	stranded, solid	0.4	260	6.5	
5	1.5	stranded, solid	0.4	260	6.5	
6	1.5	stranded, solid	0.4	260	6.5	
Supplementary information:						

IEC 60998-2-3						
Cl.	Requirement - Test			Result - Remark		Verdict
10.106	TABLE: Clamping securement and damage to the conductor test					P
	Model/type reference.....:			IT-44		
	Torque (Nm).....:					N/A
No of sample	Conductor cross-sectional area (mm ²)	Conductor type	Mass for conductor (kg)	Height H (mm)	Diameter of bushing hole (mm)	
1	2.0	stranded, solid	0.7	280	9.5	
2	2.0	stranded, solid	0.7	280	9.5	
3	2.0	stranded, solid	0.7	280	9.5	
4	2.5	stranded, solid	0.7	280	9.5	
5	2.5	stranded, solid	0.7	280	9.5	
6	2.5	stranded, solid	0.7	280	9.5	
Supplementary information:						

10.106	TABLE: Clamping securement and damage to the conductor test					P
	Model/type reference.....:			IT-55		
	Torque (Nm).....:					N/A
No of sample	Conductor cross-sectional area (mm ²)	Conductor type	Mass for conductor (kg)	Height H (mm)	Diameter of bushing hole (mm)	
1	3.5	stranded, solid	0.9	280	9.5	
2	3.5	stranded, solid	0.9	280	9.5	
3	3.5	stranded, solid	0.9	280	9.5	
4	4.0	stranded, solid	0.9	280	9.5	
5	4.0	stranded, solid	0.9	280	9.5	
6	4.0	stranded, solid	0.9	280	9.5	
Supplementary information:						

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	Verdict
10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors			p
	Model/type reference		I-11	
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force (N)	
1	0.2	Stranded	10	
2	0.2	Stranded	10	
3	0.2	Stranded	10	
4	0.4	Stranded	20	
5	0.4	Stranded	20	
6	0.4	Stranded	20	
Supplementary information:				

10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors			P
	Model/type reference		I-22	
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force (N)	
1	0.5	Stranded	20	
2	0.5	Stranded	20	
3	0.5	Stranded	20	
4	0.75	Stranded	30	
5	0.75	Stranded	30	
6	0.75	Stranded	30	
Supplementary information:				

10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors			P
	Model/type reference		IT-33	
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force (N)	
1	1.0	stranded, solid	35	
2	1.0	stranded, solid	35	
3	1.0	stranded, solid	35	
4	1.5	stranded, solid	40	
5	1.5	stranded, solid	40	
6	1.5	stranded, solid	40	

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors		P
Supplementary information:			

10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors			P
	Model/type reference	IT-44		
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force (N)	
1	2.0	stranded, solid	50	
2	2.0	stranded, solid	50	
3	2.0	stranded, solid	50	
4	2.5	stranded, solid	50	
5	2.5	stranded, solid	50	
6	2.5	stranded, solid	50	
Supplementary information:				

10.107.1	TABLE: Pull-out test on IPCDs designed for single-core conductors			P
	Model/type reference	IT-55		
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force (N)	
1	3.5	stranded, solid	60	
2	3.5	stranded, solid	60	
3	3.5	stranded, solid	60	
4	4.0	stranded, solid	60	
5	4.0	stranded, solid	60	
6	4.0	stranded, solid	60	
Supplementary information:				

10.107.2	TABLE: pull-out test on IPCDs designed for multi-core conductors					N/A
	Model/type reference					
No. of sample	Conductor cross-sectional area (mm ²)	Conductor type	Pull force F(x) (N)	Number of cores	Total pull force F (N)	
1						
2						
3						

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Cl.	Requirement - Test				Result - Remark		Verdict
10.107.2	TABLE: pull-out test on IPCDs designed for multi-core conductors						N/A
4							
5							
6							
Supplementary information:							

11.6	TABLE: Connectable conductors specified by the manufacturer			P
	Model/type reference	I-11		
	Rated connecting capacity (mm²)	0.2 - 0.4		
Conductor cross-sectional area (mm²)		Conductor type	Number of conductors	
0.2		stranded	2	
0.2		stranded	2	
0.4		stranded	2	
0.4		stranded	2	
Supplementary information:				

11.6	TABLE: Connectable conductors specified by the manufacturer		P
	Model/type reference	I-22	
	Rated connecting capacity (mm²)	0.5 - 0.75	
Conductor cross-sectional area (mm²)	Conductor type		Number of conductors
0.5	stranded		2
0.5	stranded		2
0.75	stranded		2
0.75	stranded		2
Supplementary information:			

11.6	TABLE: Connectable conductors specified by the manufacturer				P
	Model/type reference	IT-33			
	Rated connecting capacity (mm ²)	1.0 - 1.5			
Conductor cross-sectional area (mm ²)		Conductor type		Number of conductors	
1.0		stranded, solid		2	

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Cl.	Requirement - Test	Result - Remark	Verdict
11.6	TABLE: Connectable conductors specified by the manufacturer		P
	1.0	stranded, solid	2
	1.5	stranded, solid	2
	1.5	stranded, solid	2
Supplementary information:			

11.6	TABLE: Connectable conductors specified by the manufacturer		P
	Model/type reference	IT-44	
	Rated connecting capacity (mm ²)	2.0 - 2.5	
	Conductor cross-sectional area (mm ²)	Conductor type	Number of conductors
	2.0	stranded, solid	2
	2.0	stranded, solid	2
	2.5	stranded, solid	2
	2.5	stranded, solid	2
Supplementary information:			

11.6	TABLE: Connectable conductors specified by the manufacturer		P
	Model/type reference	IT-55	
	Rated connecting capacity (mm ²)	3.5 - 4.0	
	Conductor cross-sectional area (mm ²)	Conductor type	Number of conductors
	3.5	stranded, solid	2
	3.5	stranded, solid	2
	4.0	stranded, solid	2
	4.0	stranded, solid	2
Supplementary information:			

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Cl.	Requirement - Test	Result - Remark	Verdict
13.3	TABLE: Insulation resistance		P
	Model/type reference	I-11	
	Smallest cross-sectional area (mm ²)	0.2	
	Largest cross-sectional area (mm ²)	0.4	
Test voltage applied between:		Measured (MΩ)	Required (MΩ)
DC 500V		0.36	> 5
Supplementary information:			

13.3	TABLE: Insulation resistance		P
	Model/type reference	I-22	
	Smallest cross-sectional area (mm ²)	0.5	
	Largest cross-sectional area (mm ²)	0.75	
Test voltage applied between:		Measured (MΩ)	Required (MΩ)
DC 500V		0.39	> 5
Supplementary information:			

13.3	TABLE: Insulation resistance		P
	Model/type reference	IT-33	
	Smallest cross-sectional area (mm ²)	1.0	
	Largest cross-sectional area (mm ²)	1.5	
Test voltage applied between:		Measured (MΩ)	Required (MΩ)
DC 500V		0.47	> 5
Supplementary information:			

13.3	TABLE: Insulation resistance		P
	Model/type reference	IT-44	
	Smallest cross-sectional area (mm ²)	2.0	
	Largest cross-sectional area (mm ²)	2.5	
Test voltage applied between:		Measured (MΩ)	Required (MΩ)
DC 500V		0.49	> 5
Supplementary information:			

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
13.3	TABLE: Insulation resistance		P
	Model/type reference	IT-55	
	Smallest cross-sectional area (mm ²)	3.5	
	Largest cross-sectional area (mm ²)	4.0	
Test voltage applied between:		Measured (MΩ)	Required (MΩ)
DC 500V		0.59	> 5
Supplementary information:			

13.4	TABLE: Electric strength test		P
	Model/type reference	I-11	
	Rated insulation voltage (V)	250	
Test voltage applied between:		Test voltage (V)	Flashover / breakdown (Yes/No)
All clamping units together and the body		2000	No
Each clamping unit and all others together			
Supplementary information:			

13.4	TABLE: Electric strength test		P
	Model/type reference	I-22	
	Rated insulation voltage (V)	250	
Test voltage applied between:		Test voltage (V)	Flashover / breakdown (Yes/No)
All clamping units together and the body		2000	No
Each clamping unit and all others together			
Supplementary information:			

13.4	TABLE: Electric strength test		P
	Model/type reference	IT-33	
	Rated insulation voltage (V)	250V	
Test voltage applied between:		Test voltage (V)	Flashover / breakdown (Yes/No)
All clamping units together and the body		2000	No
Each clamping unit and all others together			
Supplementary information:			

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
13.4	TABLE: Electric strength test		P
	Model/type reference	IT-44	
	Rated insulation voltage (V)	250V	
Test voltage applied between:		Test voltage (V)	Flashover / breakdown (Yes/No)
All clamping units together and the body		2000	No
Each clamping unit and all others together			
Supplementary information:			

13.4	TABLE: Electric strength test		P
	Model/type reference	IT-55	
	Rated insulation voltage (V)	250V	
Test voltage applied between:		Test voltage (V)	Flashover / breakdown (Yes/No)
All clamping units together and the body		2000	No
Each clamping unit and all others together			
Supplementary information:			

15	TABLE: Temperature rise test			P
	Model/type reference	I-11		
	Connection according to Figure	☒ 1 ☐ 2		
	Conductor length	1M		
	Measurement made at temperature (°C)	85		
	Largest cross-sectional area (mm²)	0.4		
	Test current (Table 2) (A)	6		
Temperature rise dT of part/at:		Measured dT (K)		
		Sample 1	Sample 2	Sample 3
Terminal 1		33.0	36.0	32.5
Terminal 2		32.2	35.4	28.5
Body		31.2	33.7	30.8
Supplementary information:				

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	
15	TABLE: Temperature rise test			P
	Model/type reference	I-22		
	Connection according to Figure	☒ 1 ☐ 2		
	Conductor length	1M		
	Measurement made at temperature (°C)	85		
	Largest cross-sectional area (mm ²)	0.75		
	Test current (Table 2) (A)	9		
Temperature rise dT of part/at:		Measured dT (K)		
		Sample 1	Sample 2	Sample 3
Terminal 1		37.2	36.4	39.4
Terminal 2		34.9	35.6	40.5
Body		34.3	33.8	37.4
Supplementary information:				

15	TABLE: Temperature rise test			P
	Model/type reference	IT-33		
	Connection according to Figure	☒ 1 ☐ 2		
	Conductor length	1M		
	Measurement made at temperature (°C)	85		
	Largest cross-sectional area (mm ²)	1.5		
	Test current (Table 2) (A)	17.5		
Temperature rise dT of part/at:		Measured dT (K)		
		Sample 1	Sample 2	Sample 3
Terminal 1		37.7	36.9	37.1
Terminal 2		36.0	37.4	35.1
Body		33.3	34.9	34.9
Supplementary information:				

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	
15	TABLE: Temperature rise test			P
	Model/type reference	IT-44		
	Connection according to Figure	☒ 1 ☐ 2		
	Conductor length	1M		
	Measurement made at temperature (°C)	85		
	Largest cross-sectional area (mm ²)	2.5		
	Test current (Table 2) (A)	24		
Temperature rise dT of part/at:		Measured dT (K)		
		Sample 1	Sample 2	Sample 3
Terminal 1		37.5	35.7	37.3
Terminal 2		38.5	39.9	38.3
Body		37.5	36.3	33.8
Supplementary information:				

15	TABLE: Temperature rise test			P
	Model/type reference	IT-55		
	Connection according to Figure	☒ 1 ☐ 2		
	Conductor length	1M		
	Measurement made at temperature (°C)	85		
	Largest cross-sectional area (mm ²)	4.0		
	Test current (Table 2) (A)	32		
Temperature rise dT of part/at:		Measured dT (K)		
		Sample 1	Sample 2	Sample 3
Terminal 1		40.3	40.0	41.6
Terminal 2		38.5	39.9	42.0
Body		37.7	41.0	40.0
Supplementary information:				

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict

15.101.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference	I-11			
	Test torque for screws, if any (10.105) (Nm)			N/A	
	Smallest cross-sectional area (mm ²)	0.2			
	Test current (Table 2) (A)	4			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.98	0.97	0.99	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.47	1.46	1.49	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.38	1.38	1.42	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)	0.4			
	Test current (Table 2) (A)	6			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.97	0.97	0.98	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.46	1.46	1.47	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.38	1.40	1.38	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark		Verdict
15.101.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference		I-22		
	Test torque for screws, if any (10.105) (Nm)				N/A
	Smallest cross-sectional area (mm ²)		0.5		
	Test current (Table 2) (A)		6		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.96	0.95	0.97	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.44	1.43	1.46	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.36	1.35	1.37	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		0.75		
	Test current (Table 2) (A)		9		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.95	0.94	0.94	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.43	1.41	1.41	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.35	1.34	1.35	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark		Verdict
15.101.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference		IT-33		
	Test torque for screws, if any (10.105) (Nm)				N/A
	Smallest cross-sectional area (mm ²)		1.0		
	Test current (Table 2) (A)		13.5		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		0.66	0.65	0.65	
Stranded conductors (after 24 cycles)		0.95	0.93	0.93	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.99	0.98	0.98	
Stranded conductors (1,5 times 24 th cycle value)		1.43	1.40	1.40	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.73	0.73	0.75	P
Stranded conductors (after 192 cycles)		1.35	1.33	1.33	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		1.5		
	Test current (Table 2) (A)		17.5		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		0.64	0.66	0.67	
Stranded conductors (after 24 cycles)		0.94	0.94	0.96	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.96	0.99	1.01	
Stranded conductors (1,5 times 24 th cycle value)		1.41	1.41	1.44	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.71	0.72	0.74	P
Stranded conductors (after 192 cycles)		1.34	1.35	1.41	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

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Cl.	Requirement - Test		Result - Remark		Verdict
15.101.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference		IT-44		
	Test torque for screws, if any (10.105) (Nm)				N/A
	Smallest cross-sectional area (mm ²)		2.0		
	Test current (Table 2) (A)		24		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		0.62	0.61	0.60	
Stranded conductors (after 24 cycles)		0.92	0.91	0.89	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.93	0.92	0.90	
Stranded conductors (1,5 times 24 th cycle value)		1.38	1.37	1.34	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.66	0.70	0.69	P
Stranded conductors (after 192 cycles)		1.28	1.33	1.29	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		2.5		
	Test current (Table 2) (A)		24		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		0.61	0.62	0.61	
Stranded conductors (after 24 cycles)		0.91	0.93	0.90	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.92	0.93	0.92	
Stranded conductors (1,5 times 24 th cycle value)		1.37	1.40	1.36	
Flexible conductors (1,5 times 24 th cycle value)		-			N/A
Solid conductors (after 192 cycles)		0.68	0.70	0.69	P
Stranded conductors (after 192 cycles)		1.29	1.32	1.29	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark		Verdict
15.101.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference		IT-55		-
	Test torque for screws, if any (10.105) (Nm)		-		-
	Smallest cross-sectional area (mm ²)		3.5		-
	Test current (Table 2) (A)		32		-
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		0.58	0.59-	0.57	
Stranded conductors (after 24 cycles)		0.87	0.89	0.85	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.87	0.89	0.86	
Stranded conductors (1,5 times 24 th cycle value)		1.31	1.34	1.28	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.64	0.65	0.65	P
Stranded conductors (after 192 cycles)		1.28	1.29	1.26	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		4.0		
	Test current (Table 2) (A)		32		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		0.59	0.60	0.60	
Stranded conductors (after 24 cycles)		0.89	0.90	0.90	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.89	0.90	0.90	
Stranded conductors (1,5 times 24 th cycle value)		1.34	1.35	1.35	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.66	0.68	0.68	P
Stranded conductors (after 192 cycles)		1.29	1.29	1.29	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test	Result - Remark		Verdict	
15.101.2	TABLE: Temperature-cycling test (Test B)			N/A	
	Model/type reference				
	Test torque for screws, if any (10.105) (Nm)				
	Smallest cross-sectional area (mm ²)				
	Test current which produced the required temperature to the clamping unit (A)				
	Test current (Table 2) (A)				
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)					
Stranded conductors (after 24 cycles)					
Flexible conductors (after 24 cycles)					
Solid conductors (1,5 times 24 th cycle value)					
Stranded conductors (1,5 times 24 th cycle value)					
Flexible conductors (1,5 times 24 th cycle value)					
Solid conductors (after 192 cycles)					
Stranded conductors (after 192 cycles)					
Flexible conductors (after 192 cycles)					
	Largest cross-sectional area (mm ²)				
	Test current which produced the required temperature to the clamping unit (A)				
	Test current (Table 2) (A)				
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)					
Stranded conductors (after 24 cycles)					
Flexible conductors (after 24 cycles)					
Solid conductors (1,5 times 24 th cycle value)					
Stranded conductors (1,5 times 24 th cycle value)					
Flexible conductors (1,5 times 24 th cycle value)					
Solid conductors (after 192 cycles)					
Stranded conductors (after 192 cycles)					
Flexible conductors (after 192 cycles)					
Supplementary information:					

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Cl.	Requirement - Test		Result - Remark	Verdict	
15.102.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference	I-11			
	Test torque for screws, if any (10.105) (Nm)			N/A	
	Smallest cross-sectional area (mm ²)	0.2			
	Test current (Table 2) (A)	4			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.98	0.97	0.99	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.47	1.46	1.49	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.38	1.38	1.42	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)	0.4			
	Test current (Table 2) (A)	6			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		-	-	-	N/A
Stranded conductors (after 24 cycles)		0.97	0.97	0.98	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Stranded conductors (1,5 times 24 th cycle value)		1.46	1.46	1.47	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		-	-	-	N/A
Stranded conductors (after 192 cycles)		1.38	1.40	1.38	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

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Cl.	Requirement - Test		Result - Remark	Verdict	
15.102.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference	I-22			
	Test torque for screws, if any (10.105) (Nm)			N/A	
	Smallest cross-sectional area (mm ²)	0.5			
	Test current (Table 2) (A)	6			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors	(after 24 cycles)	-	-	-	N/A
Stranded conductors	(after 24 cycles)	0.96	0.95	0.97	
Flexible conductors	(after 24 cycles)	-	-	-	N/A
Solid conductors	(1,5 times 24 th cycle value)	-	-	-	N/A
Stranded conductors	(1,5 times 24 th cycle value)	1.44	1.43	1.46	
Flexible conductors	(1,5 times 24 th cycle value)	-	-	-	N/A
Solid conductors	(after 192 cycles)	-	-	-	N/A
Stranded conductors	(after 192 cycles)	1.36	1.35	1.37	P
Flexible conductors	(after 192 cycles)	-	-	-	N/A
	Largest cross-sectional area (mm ²)	0.75			
	Test current (Table 2) (A)	9			
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors	(after 24 cycles)	-	-	-	N/A
Stranded conductors	(after 24 cycles)	0.95	0.94	0.94	
Flexible conductors	(after 24 cycles)	-	-	-	N/A
Solid conductors	(1,5 times 24 th cycle value)	-	-	-	N/A
Stranded conductors	(1,5 times 24 th cycle value)	1.43	1.41	1.41	
Flexible conductors	(1,5 times 24 th cycle value)	-	-	-	N/A
Solid conductors	(after 192 cycles)	-	-	-	N/A
Stranded conductors	(after 192 cycles)	1.35	1.34	1.35	P
Flexible conductors	(after 192 cycles)	-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark		Verdict
15.102.1	TABLE: Temperature-cycling test (Test A)				P
	Model/type reference		IT-33		
	Test torque for screws, if any (10.105) (Nm)				N/A
	Smallest cross-sectional area (mm ²)		1.0		
	Test current (Table 2) (A)		13.5		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		0.66	0.65	0.65	
Stranded conductors (after 24 cycles)		0.95	0.93	0.93	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.99	0.98	0.98	
Stranded conductors (1,5 times 24 th cycle value)		1.43	1.40	1.40	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.73	0.73	0.75	P
Stranded conductors (after 192 cycles)		1.35	1.33	1.33	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		1.5		
	Test current (Table 2) (A)		17.5		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		0.64	0.66	0.67	
Stranded conductors (after 24 cycles)		0.94	0.94	0.96	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.96	0.99	1.01	
Stranded conductors (1,5 times 24 th cycle value)		1.41	1.41	1.44	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.71	0.72	0.74	P
Stranded conductors (after 192 cycles)		1.34	1.35	1.41	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark		Verdict
15.102.1	TABLE: Temperature-cycling test (Test A)			P	
	Model/type reference		IT-44		
	Test torque for screws, if any (10.105) (Nm)				N/A
	Smallest cross-sectional area (mm ²)		2.0		
	Test current (Table 2) (A)		24		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)		0.62	0.61	0.60	
Stranded conductors (after 24 cycles)		0.92	0.91	0.89	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.93	0.92	0.90	
Stranded conductors (1,5 times 24 th cycle value)		1.38	1.37	1.34	
Flexible conductors (1,5 times 24 th cycle value)		-	-	-	N/A
Solid conductors (after 192 cycles)		0.66	0.70	0.69	P
Stranded conductors (after 192 cycles)		1.28	1.33	1.29	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
	Largest cross-sectional area (mm ²)		2.5		
	Test current (Table 2) (A)		24		
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)		0.61	0.62	0.61	
Stranded conductors (after 24 cycles)		0.91	0.93	0.90	
Flexible conductors (after 24 cycles)		-	-	-	N/A
Solid conductors (1,5 times 24 th cycle value)		0.92	0.93	0.92	
Stranded conductors (1,5 times 24 th cycle value)		1.37	1.40	1.36	
Flexible conductors (1,5 times 24 th cycle value)		-			N/A
Solid conductors (after 192 cycles)		0.68	0.70	0.69	P
Stranded conductors (after 192 cycles)		1.29	1.32	1.29	P
Flexible conductors (after 192 cycles)		-	-	-	N/A
Supplementary information:					

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	
15.102.1	TABLE: Temperature-cycling test (Test A)			P
	Model/type reference		IT-55	
	Test torque for screws, if any (10.105) (Nm)			N/A
	Smallest cross-sectional area (mm ²)		3.5	
	Test current (Table 2) (A)		32	
Measured voltage drop of:		Measured voltage drop (mV)		
		Sample 1	Sample 2	Sample 3
Solid conductors	(after 24 cycles)	0.58	0.59-	0.57
Stranded conductors	(after 24 cycles)	0.87	0.89	0.85
Flexible conductors	(after 24 cycles)	-	-	-
Solid conductors	(1,5 times 24 th cycle value)	0.87	0.89	0.86
Stranded conductors	(1,5 times 24 th cycle value)	1.31	1.34	1.28
Flexible conductors	(1,5 times 24 th cycle value)	-	-	-
Solid conductors	(after 192 cycles)	0.64	0.65	0.65
Stranded conductors	(after 192 cycles)	1.28	1.29	1.26
Flexible conductors	(after 192 cycles)	-	-	-
	Largest cross-sectional area (mm ²)		4.0	
	Test current (Table 2) (A)		32	
Measured voltage drop of:		Measured voltage drop (mV)		
		Sample 4	Sample 5	Sample 6
Solid conductors	(after 24 cycles)	0.59	0.60	0.60
Stranded conductors	(after 24 cycles)	0.89	0.90	0.90
Flexible conductors	(after 24 cycles)	-	-	-
Solid conductors	(1,5 times 24 th cycle value)	0.89	0.90	0.90
Stranded conductors	(1,5 times 24 th cycle value)	1.34	1.35	1.35
Flexible conductors	(1,5 times 24 th cycle value)	-	-	-
Solid conductors	(after 192 cycles)	0.66	0.68	0.68
Stranded conductors	(after 192 cycles)	1.29	1.29	1.29
Flexible conductors	(after 192 cycles)	-	-	-
Supplementary information:				

IEC 60998-2-3					
Cl.	Requirement - Test	Result - Remark		Verdict	
15.102.1	TABLE: Temperature-cycling test (Test B)			N/A	
	Model/type reference				
	Test torque for screws, if any (10.105) (Nm)				
	Smallest cross-sectional area (mm ²)				
	Test current which produced the required temperature to the clamping unit (A)				
	Test current (Table 2) (A)				
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Solid conductors (after 24 cycles)					
Stranded conductors (after 24 cycles)					
Flexible conductors (after 24 cycles)					
Solid conductors (1,5 times 24 th cycle value)					
Stranded conductors (1,5 times 24 th cycle value)					
Flexible conductors (1,5 times 24 th cycle value)					
Solid conductors (after 192 cycles)					
Stranded conductors (after 192 cycles)					
Flexible conductors (after 192 cycles)					
	Largest cross-sectional area (mm ²)				
	Test current which produced the required temperature to the clamping unit (A)				
	Test current (Table 2) (A)				
Measured voltage drop of:		Measured voltage drop (mV)			
		Sample 4	Sample 5	Sample 6	
Solid conductors (after 24 cycles)					
Stranded conductors (after 24 cycles)					
Flexible conductors (after 24 cycles)					
Solid conductors (1,5 times 24 th cycle value)					
Stranded conductors (1,5 times 24 th cycle value)					
Flexible conductors (1,5 times 24 th cycle value)					
Solid conductors (after 192 cycles)					
Stranded conductors (after 192 cycles)					
Flexible conductors (after 192 cycles)					
Supplementary information:					

IEC 60998-2-3					
Cl.	Requirement - Test		Result - Remark	Verdict	
15.102.2	TABLE: Short-time withstand current test			P	
	Model/type reference	I-11			
	Maximum cross-sectional area (mm ²)	0.4			
	Conductor type.....	Stranded			
	Test torque for screws, if any (10.105) (Nm)			N/A	
	Test current (120 A/mm ² of the cross-sectional area of the connected conductor) (A)	48			
	Duration of the test current (s).....	1			
	Test current for measuring the voltage drop before and after the test (1/10 of Table 2) (A).....	6			
Measured voltage drop:		Measured voltage drop (mV)			
		Sample 1	Sample 2		Sample 3
Before the test		0.98	0.97	0.99	
1,5 times the value before the test		1.47	1.46	1.49	
After the test		1.38	1.38	1.42	P
Supplementary information:					

15.102.2	TABLE: Short-time withstand current test			P	
	Model/type reference	I-22			
	Maximum cross-sectional area (mm ²)	0.75			
	Conductor type.....	Stranded			
	Test torque for screws, if any (10.105) (Nm)			N/A	
	Test current (120 A/mm ² of the cross-sectional area of the connected conductor) (A)	90			
	Duration of the test current (s).....	1			
	Test current for measuring the voltage drop before and after the test (1/10 of Table 2) (A).....	9			
Measured voltage drop:		Measured voltage drop (mV)			
		Sample 1	Sample 2	Sample 3	
Before the test		0.96	0.95	0.97	
1,5 times the value before the test		1.44	1.43	1.46	
After the test		1.36	1.35	1.37	P
Supplementary information:					

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	Verdict
15.102.2	TABLE: Short-time withstand current test			P
	Model/type reference	IT-33		
	Maximum cross-sectional area (mm ²)	1.5		
	Conductor type.....	Stranded, solid		
	Test torque for screws, if any (10.105) (Nm)			N/A
	Test current (120 A/mm ² of the cross-sectional area of the connected conductor) (A)	180		
	Duration of the test current (s)	1		
	Test current for measuring the voltage drop before and after the test (1/10 of Table 2) (A)	17.5		
Measured voltage drop:		Measured voltage drop (mV)		
		Sample 1	Sample 2	Sample 3
Before the test		0.66, 0.95	0.65, 0.93	0.65, 0.93
1,5 times the value before the test		0.99, 1.43	0.98, 1.40	0.98, 1.40
After the test		0.73, 1.35	0.73, 1.33	0.75, 1.33
Supplementary information:				

15.102.2	TABLE: Short-time withstand current test			P
	Model/type reference	IT-44		
	Maximum cross-sectional area (mm ²)	2.5		
	Conductor type.....	Stranded, solid		
	Test torque for screws, if any (10.105) (Nm)			N/A
	Test current (120 A/mm ² of the cross-sectional area of the connected conductor) (A)	300		
	Duration of the test current (s)	1		
	Test current for measuring the voltage drop before and after the test (1/10 of Table 2) (A)	24		
Measured voltage drop:		Measured voltage drop (mV)		
		Sample 1	Sample 2	Sample 3
Before the test		0.62, 0.92	0.61, 0.91	0.60, 0.89
1,5 times the value before the test		0.93, 1.38	0.92, 1.37	0.90, 1.34
After the test		0.66, 1.28	0.70, 1.33	0.69, 1.29
Supplementary information:				

IEC 60998-2-3				
Cl.	Requirement - Test		Result - Remark	
15.102.2	TABLE: Short-time withstand current test			P
	Model/type reference	IT-55		
	Maximum cross-sectional area (mm ²)	4.0		
	Conductor type.....	Stranded, solid		
	Test torque for screws, if any (10.105) (Nm)			N/A
	Test current (120 A/mm ² of the cross-sectional area of the connected conductor) (A)	480		
	Duration of the test current (s)	1		
	Test current for measuring the voltage drop before and after the test (1/10 of Table 2) (A)	32		
Measured voltage drop:		Measured voltage drop (mV)		
		Sample 1	Sample 2	Sample 3
Before the test		0.58, 0.87	0.59, 0.89	0.57, 0.85
1,5 times the value before the test		0.87, 1.31	0.89, 1.34	0.86, 1.28
After the test		0.64, 1.28	0.65, 1.29	0.65, 1.26
Supplementary information:				

16.2	TABLE: Heating cabinet test			P
	Test temperature (°C)	☒ 85	☐ T + 45 =	
	Model/type reference	Sample 1	Sample 2	Sample 3
	I-11	P	P	P
	I-22	P	P	P
	IT-33	P	P	P
	IT-44	P	P	P
	IT-55	P	P	P
Supplementary information:				
P: After the test no changes impairing further use and markings still legible				

16.3A	TABLE: Ball pressure test of insulating materials			P
	Test temperature (°C) :		☒ 125 ☐ T + 45 =	
Part under test		Material designation / manufacturer	Impression diameter (mm)	
Insulation body		LUPOY GN-1006F(PC)/LG CHEMICAL LTD	1.2	
supplementary information:				

IEC 60998-2-3			
Cl.	Requirement - Test	Result - Remark	Verdict
16.3B	TABLE: Ball pressure test of insulating materials		N/A
	Test temperature (°C).....: ☐ 70 ☐ 40 + dT =		
Part under test		Material designation / manufacturer	Impression diameter (mm)
Supplementary information:			

17	TABLE: Clearances and creepage distances				N/A
	Rated insulation voltage (V).....:				
Clearance cl, creepage distance cr and distance through sealing compound tsc at/of:		Required cl, cr, tsc (mm)	Measured cl (mm)	Measured cr (mm)	Measured tsc (mm)
Supplementary information:					

18	TABLE: Glow-wire test			P
Part under test		Material designation / manufacturer	Test temperature (°C)	Time of extinguish of flames and glowing, if any
Insulation body		LUPOY GN-1006F(PC)/LG CHEMICAL LTD	750	No flame
Supplementary information:				

19	TABLE: Resistance to tracking			P
Part under test		Material designation / manufacturer	Test voltage (V)	Remarks
Insulation body		LUPOY GN-1006F(PC)/LG CHEMICAL LTD	250	
Supplementary information: UL CTI:3				

List of test equipment used:

A completed list of used test equipment shall be provided in the Test Reports when a Manufacturer Testing Laboratory according to CTF stage 1 or CTF stage 2 procedure has been used.

Note: This page may be removed when CTF stage 1 or CTF stage 2 are not used. See also clause 4.8 in OD 2020 for more details.

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
15	AC Power Supply (CVCF)	DSP-1000	In: AC 220 V, 50/60 Hz, 10 kVA Out: AC (60-300) V, 50/60 Hz, 10 kVA	-	-
15	High Current Supply	500A	In: AC 100-140-180-220-240 V, 60 Hz Out: AC 10 V, 5 kVA	-	-
15.101.1	DC Power Supply	6261B	In: AC 220 V, 60 Hz Out: DC (0-20) V, DC (0-50) A	-	-
15	Power Meter	WT210	AC/DC 600 V, 1 kHz, 20 A Function: Voltage(V), Current(A), Watt(W), PF, Frequency(Hz), VA	2018-07-10	2019-07-10
15 15.101.1 16.3	Hybrid Recorder	DR230	K-type, 30-CH Resolution: 0.1 °C, Accuracy: 0.05 %	2018-07-10	2019-07-10
15 15.101.1	Digital Clamp Meter	ACDC-400	AC/DC 400 mV - 600 V AC/DC (0-400) A	2018-07-10	2019-07-10
13.4	Voltage Withstanding Tester	TOS5051	AC/DC 5 kV, 100 mA	2018-07-10	2019-07-10
16.3 10.106	Stop Watch	HS-3	1/100 sec	2018-07-21	2020-07-21
16.3	Forced Convection Oven	FC-PO-150	(10-200) °C Resolution: 1 °C	2018-07-10	2019-07-10
16.3	Ball Pressure Tester	BPA 10	20 N, R2.5(D5.0)	2018-09-27	2021-09-27
10.106	Tape Measure	5M	(0-5) m, Resolution: 1 mm	2018-03-13	2020-03-13
10.107	Push-Pull Gauge (Digital)	DS2-1000N	1 000 N	2018-04-12	2019-04-12
10.106	Flexion tester	MFT-17-01	-	-	-