Test Report issued under the responsibility of:

TEST REPORT
IEC 61010-2-201
Safety requirements for electrical equipment for measurement, control, and laboratory use
Part 2-201: Particular requirements for control equipment

Report Number..... :	20TH0250_61010-2-201_3
Date of issue ..... :	2024-09-30
Total number of pages ..... :	33
Name of Testing Laboratory preparing the Report ..... :	Bureau Veritas Consumer Products Services Germany GmbH Businesspark A96, 86842 Türkheim, Germany
Applicant's name ..... :	PULS GmbH
Address ..... :	Elektrastr. 6, 81925 Muenchen, Germany
Test specification:	
Standard ..... :	IEC 61010-2-201:2017 for use with IEC 61010-1:2010, AMD1:2016
Test procedure..... :	CB Scheme
Non-standard test method..... :	N/A
Test Report Form No. ..... :	IEC61010_2_201D
Test Report Form(s) Originator.... :	UL(US)
Master TRF ..... :	2019-04-11

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Test item description..... :	Power Supply
Trade Mark..... :	PULS
Manufacturer ..... :	PULS GmbH
Model/Type reference..... :	FPT300.24b-ccc-ddd, FPT500.24b-ccc-ddd, FPT500.48b-ccc-ddd, FPT400.24b-ccc-ddd (b = 1, 2, 5, 6 or 7; c = 001-999; d = 101-299 or 300-599 or 600-699 for brand labelled units)
Ratings..... :	see main test report

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

☒	**CB Testing Laboratory:**	Bureau Veritas Consumer Products Services Germany GmbH	
Testing location/ address ..... :		Businesspark A96, 86842 Türkheim, Germany	
Tested by (name, function, signature)..... :		Nils DOHRMANN (Lab Technician)	Nils Dohrmann Lab Technician Digitally signed by Nils Dohrmann DN: cn=Nils Dohrmann, o=Bureau Veritas CPS Germany GmbH, ou=BV TG, email=nils.dohrmann@bureauveritas.com, c=DE Date: 2024.09.30 08:47:13 +02'00'
Approved by (name, function, signature) .. :		Max GEBUHR (Lab Engineer)	Max Gebuhr Lab Engineer Digitally signed by Max Gebuhr DN: cn=Max Gebuhr, o=Bureau Veritas Deutschland GmbH, ou=TG, email=max.gebuhr@bureauveritas.com, c=DE Date: 2024.09.30 11:11:37 +02'00'
☐	**Testing procedure: CTF Stage 1:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 2:**	N/A	
Testing location/ address ..... :			
Tested by (name + signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
☐	**Testing procedure: CTF Stage 3:**	N/A	
☐	**Testing procedure: CTF Stage 4:**	N/A	
Testing location/ address ..... :			
Tested by (name, function, signature)..... :			
Witnessed by (name, function, signature) . :			
Approved by (name, function, signature) .. :			
Supervised by (name, function, signature) :			

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

Attachment No. 1 – National Differences (2 pages)

Summary of testing:

This test report must be used in conjunction with test report no. 20TH0250-61010-1_3, referred to as "main test report" throughout this document.

Tests performed (name of test and test clause):	**Testing location:**
All tests within the report See main test report for test results.	Bureau Veritas Consumer Products Services Germany GmbH Businesspark A96, 86842 Türkheim, Germany

Summary of compliance with National Differences (List of countries addressed):

EU, US, CA

The product fulfils the requirements of

- IEC 61010-1:2010, AMD1:2016 in conjunction with IEC 61010-2-201:2017
- EN 61010-1:2010 + A1:2019 in conjunction with EN IEC 61010-2-201:2018
- UL 61010-1 (3rd Ed.); Am. 1 in conjunction with UL 61010-2-201, Edition 2
- CAN/CSA-C22.2 No 61010-1 + Amd 1 in conjunction with CAN/CSA-C22.2 NO. 61010-2-201:18

Copy of marking plate:

The artwork below may be only a draft. The use of certification marks on a product must be authorized by the respective NCBs that own these marks.

See main test report.

Test item particulars:	
Type of item ..... :	Component of control equipment: power supply
Modular equipment ..... :	No
Description of equipment function (intended use) .... :	Industrial power supply for wall-mounting
Switching device, intended use ..... :	---
Enclosure type ..... :	enclosed equipment
Connection to MAINS supply ..... :	model-dependent: – mating connector or – non-detachable power cord with free leads (see main test report)
Overvoltage category ..... :	see main test report
POLLUTION DEGREE ..... :	Models with IP67: 3 *(reduced to PD2 internal by the enclosure)* Models with IP54: 2
Means of protection ..... :	Class I (PE connected)
Environmental conditions ..... :	See main test report
For use in wet locations ..... :	Yes (24 V output) No (48 V output)
Equipment mobility ..... :	Fixed
Operating conditions ..... :	Continuous
Overall size of equipment (W x D x H) ..... :	approx. 183 x 181 x 60 mm (excl. connectors)
Mass of equipment (kg) ..... :	1,29
Marked degree of protection to IEC 60529 ..... :	IP54, IP67, IP65 (model-dependent; see “Description of model differences”)
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 ..... :	Rev. 0: 2020-03-09 Rev. 1: 2021-05-31 Rev. 2: N/A Rev. 3: 2024-07-29
Date (s) of performance of tests ..... :	Rev. 0: 2020-04-01 to 2020-07-27 Rev. 1: 2021-08-02 to 2021-11-02 Rev. 2: N/A Rev. 3: 2024-08-28 to 2024-09-04

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 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 (one factory only)
When differences exist; they shall be identified in the General product information section.	
Name and address of factory (ies) ..... :	PULS INVESTICNI S R O Prazska 5639 430 01 Chomutov CZECH REPUBLIC PULS ELECTRONICS (SUZHOU) CO., LTD. NO 1 RUI EN LANE XINGPU RD, SIP, SUZHOU, IANGSU 215021 CHINA
General product information and other remarks: This test report is to be used in conjunction with the main test report stated in "Summary of testing". Refer to this test report for details. See section "Test Report History" in the main test report for changes.	

IEC 61010-2-201			
Clause	Requirement + Test	Result - Remark	Verdict
4.4	**Testing in SINGLE FAULT CONDITIONS**		P
4.4.2	Application of fault conditions		N/A
4.4.2.101	Switching devices test	Approved relay used. No additional tests performed.	P
4.4.2.101.1	Overload test .....:		N/A
4.4.2.101.2	Endurance test (when required by cl. 14.102) .....:		N/A
	Exemption for solid state devices for general or resistive use		N/A
5	**MARKING AND DOCUMENTATION**		N/A
5.1.5.2	TERMINALS	No functional earth	N/A
	a) FUNCTIONAL EARTH TERMINALS		N/A
5.1.8	FIELD WIRING TERMINAL boxes		N/A
5.4.1	Documentation in electronic media provided with symbol 14	Safety relevant instructions are provided with the equipment	N/A
5.4.3	Equipment installation		N/A
	h) OPEN EQUIPMENT	No open equipment	N/A
	d) 1) Supply and FIELD WIRING requirements		N/A
5.4.4	Equipment operation		N/A
	j) methods of reducing risk of burns from surfaces	Symbol 13 of IEC 61010-1 is marked, but not required by the standard.	N/A
6	**PROTECTION AGAINST ELECTRIC SHOCK**		P
6.1.2	Exceptions: Parts for operating reasons HAZARDOUS LIVE and ACCESSIBLE to SERVICE PERSONNEL during NORMAL USE:		N/A
	a) parts of lamps and lamp sockets after lamp removal		N/A
	b) parts intended to be replaced by SERVICE PERSONNEL or other action if accessible only by a tool and having a warning marking		N/A
	Parts not HAZARDOUS LIVE 10 s after interruption of supply.....:		N/A
	Charge received from an internal capacitor tested to clause 6.3, below levels of 6.3.1 c).....:		N/A
6.2	Determination of ACCESSIBLE PARTS		P
6.2.1	General (enclosed equipment) .....:	(see main report, Form A.4)	P
6.2.2	Examination (enclosed equipment) .....:	(see main report, Form A.4)	P

IEC 61010-2-201			
Clause	Requirement + Test	Result - Remark	Verdict
6.2.3	Openings above parts that are HAZARDOUS LIVE (enclosed equipment)..... :		N/A
6.2.4	Openings for pre-set controls		N/A
	EUT is enclosed equipment		N/A
	- test pin with length of 100 mm and 3 mm in diameter applied		N/A
6.2.101	Accessibility of TERMINALS and ports		P
	Operator accessible interfaces, ports, terminals not hazardous live under normal and single-fault conditions	Power- and signal-output are not hazardous live.	P
6.2.102	Control equipment		P
6.2.102.1	Accessible parts		P
	No hazardous live parts accessible at enclosed equipment or at open equipment installed to manufacturer's instructions (See 6.2.2)	Enclosed equipment	P
	Protection from hazards for service personnel making adjustments at open equipment (See 6.2.2)	Enclosed equipment	N/A
6.2.102.2	SELV/PELV circuits		N/A
	Intended use at dry locations		N/A
6.5.2.6	Transformer PROTECTIVE BONDING screen ..... :		N/A
	No overcurrent protection means for the winding		N/A
	Test current twice the rating of equipment overcurrent protection means		N/A
	Overcurrent protection means		N/A
	- integrated into equipment		N/A
	- specified in manual		N/A
6.5.2.101	Classes of equipment or equipment classes		P
6.5.2.101.2	Class I equipment		P
	Flexible cord includes protective earth (PE)	The (optional) power cord is provided with earth	P
	Accessible conductive parts connected to PE	Enclosure is connected to PE	P
	PE circuit not interrupted by removing parts of enclosure for normal maintenance	No removable parts	N/A
6.5.2.101.3	Class II equipment	Class I	N/A
	Double or reinforced insulation used or		N/A
	Protective impedance used		N/A
	Means for maintaining continuity of double insulated for protection		N/A
	Connection to earth terminals for functional purposes doesn't break continuity of double insulation		N/A
	Is one of the following types:		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	a) Insulation encased		N/A
	- by durable and continuous enclosure of insulating material		N/A
	- envelops all conductive parts with exception of small parts		N/A
	- small parts insulated by reinforced insulation or equivalent		N/A
	b) Metal-encased		N/A
	- by continuous metal enclosure		N/A
	- double insulation used throughout, except:		N/A
	- parts have reinforced insulation		N/A
	c) combination of a) and b)		N/A
6.5.2.101.4	Class III equipment	Class I	N/A
	All circuits SELV/PELV		N/A
	Voltages do not exceed SELV/PELV limits		N/A
	Earth terminals for functional purposes		N/A
	Wiring for SELV/PELV circuits and other circuits:		N/A
	- segregated, or		N/A
	- insulation rated for the rated voltage, or		N/A
	- earthed screen, or		N/A
	- additional insulation based on 60364-4-41		N/A
6.5.2.102	Protective earth requirement for enclosed equipment		P
	Accessible parts of Class I equipment electrically interconnected and connected to the protective earth terminal	The chassis is connected to the protective earth terminal.	P
	Structural parts providing electrical continuity independent of usage on its own or incorporated in an assembly	Protective bonding from the appliance inlet to the PCB by internal wiring; and from the PCB to the enclosure by screw.	P
	Cord or cable that supplies Class I portable equipment has a PE conductor		N/A
	Accessible isolated conductive parts are so located that exclude contact with live parts and dielectric voltage test passed for reinforced insulation ..... :		N/A
	Class II equipment with internal functional earth connection, without PE terminal or PE conductor in input cord		N/A
	Class I equipment with PE terminal	Part of appliance inlet	P
	PE terminal readily accessible, and		P
	Connection maintained when cover or any removable part removed	No removable parts	N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Mains cord connected equipment with PE terminal integral to plug cap or socket		P
	PE terminal is screw, stud or pressure type and made of corrosion resistant material		P
	Clamping means PE terminals adequately locked against accidental loosening and		N/A
	- only to be loosed by aid of a tool		N/A
	PE terminals and earth contacts not connected direct to neutral terminal within equipment		P
	Devices (as capacitors or surge suppression devices) appropriately rated, when used to connect PE terminal and neutral		P
	PE terminal and subsequent protective internal equipment complies with requirements in 6.5.2.5		P
	PE terminal has no other function		P
6.5.2.103	Protective earth requirements for open equipment		N/A
	Open equipment complies with the requirements of clause 6.5.2.4 or 6.5.2.5. Except that the provision for connection to an external protective conductor is replaced by a means for bonding to the enclosure accessible to the operator.	Enclosed equipment	N/A
6.6.2	TERMINALS for external circuits		N/A
	All parts of terminals that maintain contact and carry current are of metal, and have adequate mechanical strength in		N/A
	Bending of each conductor not possible to radius curvature less than six times of its diameter after removal of covering elements		N/A
	Clearances between terminals and between terminals and earthed parts in conformity to 6.7.101		N/A
6.6.3	Circuits with terminals which are HAZARDOUS LIVE		N/A
	No accessible conductive parts of terminals and ports of enclosed equipment are hazardous life		N/A
	Ports of open equipment protected as defined in table 103		N/A
6.7	Insulation requirements.....:	See main test report for test results. (Form A.14; Form A.15)	P
6.7.1	The nature of insulation		P
6.7.1.1	Insulation between ACCESSIBLE parts or between separate circuits consist of CLEARANCES, CREEPAGE DISTANCES and solid insulation if provided as protection against a HAZARD		P

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Clause	Requirement + Test	Result - Remark	Verdict
	Insulation specified in Figure 102 ..... :	See main test report for test results. (Form A.14; Form A.15)	P
	Between ACCESSIBLE SELV circuits, ACCESSIBLE PELV circuits, or ungrounded conductive ACCESSIBLE parts and HAZARDOUS LIVE parts, two levels of protection		P
6.7.1.2	CLEARANCES		P
	Linear interpolation used between nearest two points in Table 3.		P
6.7.1.5	Requirements for insulation according to type of circuit..... :	See main test report for test results. (Form A.14; Form A.15)	P
	a) requirements as specified in Figure 102, or		P
	b) requirements as specified in Part 1 Annex K.3 for circuits that have one or more of the following characteristics..... :	See main test report for test results. (Form A.14; Form A.15)	P
	1) maximum TRANSIENT OVERVOLTAGE is limited to known level below the level of MAINS CIRCUIT		N/A
	2) maximum TRANSIENT OVERVOLTAGE is above the level of MAINS CIRCUIT		N/A
	3) WORKING VOLTAGE is the sum of more than one circuit or a mixed voltage		P
	4) WORKING VOLTAGE includes recurring peak voltage, may include non-sinusoidal or non-periodic waveform		P
	5) WORKING VOLTAGE with a frequency above 30kHz		P
	c) requirements as specified in Annex K.1 for Mains circuits of Overvoltage Category III or IV or II over 300 V.		P
	d) requirements as specified in Annex K.2 for secondary circuits separated from the circuits in c) only by means of a transformer		N/A
6.7.1.101	Non-metallic material supporting hazardous live parts	Approved materials are used for non-metallic parts supporting hazardous live parts.	P
	CTI ≥ 175 for non-metallic material supporting hazardous live parts		P
6.7.2	Insulation for MAINS CIRCUITS of OVERVOLTAGE CATEGORY II with a nominal supply voltage up to 300V		P
	For mains circuits above 300 V Annex K applies. For Tables K.2, K.3, and K.4, linear interpolation of creepage used		P
6.7.2.1	CLEARANCES and CREEPAGE DISTANCES..... :	See main test report for test results. (Form A.14; Form A.15)	P

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Clause	Requirement + Test	Result - Remark	Verdict
	Values for MAINS CIRCUITS of replacement Table 4 are met		p
6.7.2.2	Solid insulation		P
6.7.2.2.1	For mains > 300V values of Annex K applied		P
	Withstands electrical and mechanical stresses in normal use and all RATED environmental conditions of clause 1.4		P
	Voltage tests of 6.8.3 with values of Table 5..... :	see main test report, Form A.18	P
	A.C. circuits with the A.C. test of 6.8.3.1	tested with d.c.	N/A
	D.C. circuits with the D.C. test of 6.8.3.2		P
	The 1 min & the 5 s test or a single test representing the worst case combination of both tests ..... :	see main test report, Form A.18	P
6.7.3.1	For MAINS CIRCUITS above 300 V, Annex K used		P
6.7.3.2	CLEARANCES	Mains circuits	N/A
	a) meet the values of replacement Table 6 for BASIC INSULATION and SUPPLEMENTARY INSULATION; or		N/A
	twice the values of replacement Table 6 for REINFORCED INSULATION, or		N/A
	b) pass the voltage tests of 6.8 with values of replacement Table 6 ; with following adjustments .... :		N/A
	1) values for REINFORCED INSULATION are 1,6 times the values for BASIC INSULATION		N/A
	2) if operating altitude is greater than 2000 m values of CLEARANCES multiplied with factor of Table 3		N/A
6.7.3.3	CREEPAGE DISTANCES		N/A
	Based on WORKING VOLTAGE meets the values of Table 7 WITH THE REPLACEMENT OF THE FIRST COLUMN HEADING 'SECONDARY WORKING VOLTAGE A.C.R.M.S V^C		N/A
6.7.101	Insulation for field wiring terminals of overvoltage category II with a nominal voltage up to 1000 V		N/A
	Minimum clearances at field wiring terminals comply with Table 104		N/A
	Minimum creepage distances at field wiring terminals comply with Table 104		N/A
7	**PROTECTION AGAINST MECHANICAL HAZARDS**		N/A
7.1.101	Open and panel mounted equipment	Enclosed equipment	N/A
	Open equipment installed within an enclosure		N/A
	For panel mounted equipment, the portion that form as part of the ENCLOSURE complies with clause 7		N/A
7.3	Moving parts		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
7.3.3	RISK assessment for mechanical HAZARDS to body parts		N/A
	For control equipment having only cooling fans as moving parts only accessibility checked		N/A
8	**RESISTANCE TO MECHANICAL STRESSES**		P
8.1	Normal Energy protection level is 6.8 ±5 % J		P
8.1.101	Open equipment		N/A
	Additional enclosure providing safety required by the manual		N/A
8.1.102	Panel mounted equipment		N/A
	When portion inside the required additional enclosure is an open equipment, the portion outside the additional enclosure is in conformity with cl. 8		N/A
8.2	ENCLOSURE rigidity test		P
8.2.2	Impact test ..... :	See main test report, Form A.21A	P
	Impact applied to any part of ENCLOSURE causing a HAZARD if damaged, dimension X and mass are determined by equation J = X x m x g		P
9	**PROTECTION AGAINST THE SPREAD OF FIRE**		P
9.3.2	Constructional requirements		P
	Open equipment conforms with a) and b)	Enclosed equipment; complies with a), b) and c)	N/A
	Non-metallic enclosure of open equipment and portion of PANEL MOUNTED EQUIPMENT, forming part of enclosed equipment		P
	- has flammability rating of V-1 or better, or		P
	- the glow-wire test is passed		N/A
	Magnesium alloy used for the enclosure verified as specified in Annex DD		N/A
10	**EQUIPMENT TEMPERATURE LIMITS AND RESISTANCE TO HEAT**		P
10.1	Surface temperature limits for protection against burns		P
	Easily touched surfaces within the limits in NORMAL and in SINGLE FAULT CONDITION (Table 19, Part 201). :	See Table 10	P
	- at an specified ambient temperature of 40 °C		P
	- for equipment exceeding the limits in Table 19, see 5.4.4 item j.		N/A
10.3	Other temperature measurements		N/A

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Clause	Requirement + Test	Result - Remark	Verdict
	Following measurements conducted if applicable ... :		N/A
	a) Does not apply to control equipment FIELD WIRING which do not contain power consumable parts		N/A
	f) Temperature of field wiring terminals measured, and - temperature requirements checked		N/A
10.4	Conduct of temperature tests		P
10.4.1.100	General method		P
	Tests conducted under reference test conditions .. :	See main test report, Form A.26A Tested in stand-alone configuration.	P
10.4.1.101	Special method, PANEL MOUNTED EQUIPMENT		N/A
	Test ambient temperatures of the outer portion of the equipment and inner portion of the equipment		N/A
	General method from 10.4.1.100 followed with regard to test conditions and least favourable EUT configuration		N/A
	Three special methods for testing PANEL MOUNTED EQUIPMENT a), b), or c)		N/A
10.4.1.102	Special method, large or heavy equipment		N/A
	Tested at room AMBIENT TEMPERATURE, with the recorded temperature corrected by the difference between the EUT's max. RATED AMBIENT TEMPERATURE and actual room AMBIENT TEMPERATURE		N/A
10.4.1.103	Other considerations, applying to all cases		P
	a) temperature of windings measured by resistance method or use of temperature sensors	Temperature sensors	P
	b) Fault tests done at room AMBIENT TEMPERATURE and corrected to RATED AMBIENT TEMPERATURE		P
10.5	Resistance to heat		P
10.5.2	Non-metallic enclosures		P
	This sub clause is applicable for enclosed equipment		P
11	**PROTECTION AGAINST HAZARDS FROM FLUIDS**		P
11.6	Specially protected equipment		P
	Inspection of the equipment	IP rating: IP67, IP65, IP54 (depends on model, see main report)	P
	Equipment testing to IEC 60529 or other method..... :	See IP test report no. 20TH0250-EN60529_x	P
	Voltage test to 6.8 without humidity preconditioning. :	No ingress of water or dust	P
14	**COMPONENTS AND SUBASSEMBLIES**		P

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Clause	Requirement + Test	Result - Remark	Verdict
14.101	Components bridging insulation		P
14.101.1	Capacitors		P
	Capacitor(s) connected between 2 line conductors in mains circuit or between line conductor and neutral complies with subclass X1 or X2 of IEC 60384-14,	See list of components in the main test report; approved capacitors used	P
	- used in accordance with its rating		P
	Capacitor(s) bridging any double or reinforced insulation comply with Y1 or Y2 of IEC 60384-14 in accordance with its ratings (requires 2 x Y2 in series)	2 capacitors are connected in series	P
	Capacitor(s) between the MAINS CIRCUIT and protective earth complies with subclass Y1, Y2, or Y4 of IEC 60384-14		P
14.101.2	Surge suppressors		P
	Surge suppressor in mains circuit is a VDR, and		P
	- complies with IEC 61051-2		P
14.102	Switching devices		N/A
	Switching devices controlling outputs operate within their ratings or	Approved relay	P
	- according to IEC 60947-5-1, or		P
	- overload and endurance tests to 4.4.2.15 passed		N/A

IEC 61010-2-201			
Clause	Requirement — Test	Result — Remark	Verdict

4.4	**TABLE: Testing in SINGLE FAULT CONDITION – Results**			N/A [1)]
Test sub-clause	Fault No.	Fault description	How was test terminated Comments	Meets 4.4.4

NOTE Td = Test duration in hh:mm:ss
Record dielectric strength test in Table 6.8 and temperature tests in Table10 or 10.2.
Record in the comments column for each test whether carried out during or after SINGLE FAULT CONDITION.

Supplementary information:

[1)] See Form A.1 in the main test report.

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Clause	Requirement – Test	Verdict

4.4.2.101.1	TABLE: Switching devices tests - Overload test		N/A
Parameter	Test value	Note	—
Intended use			—
Current			—
Voltage			—
Power factor			—
Number of cycles	50	each cycle: 1 sec on / 9 sec off	—
Endurance test follows	YES / NO		—
Electrical function	--	--	
Mechanical function	--	--	
No dielectric breakdown	--	--	
Supplementary information:			

4.4.2.101.2	Endurance test		N/A
Parameter	Test value	Note	
Intended use			—
Current			—
Voltage			—
Power factor			—
Number of cycles	6000	each cycle: 1 sec on / 9 sec off	—
		except first 1000 cycles of pilot duty test: 1 cycle per second, except first 10 to 12 cycles as fast as possible	
Electrical function	--	--	
Mechanical function	--	--	
No dielectric breakdown	--	--	
Supplementary information:			

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6.2	**TABLE: Determination of ACCESSIBLE parts (List of parts)**		N/A [6)]
6.1.2	Exceptions		—
Item	Description	Determination method (NOTE 5)	Exception under 6.1.2 (NOTE 4)

NOTE 1 – Test fingers and pins are to be applied without force unless a force is specified (see 6.2.2)

NOTE 2 – Special consideration should be given to inadequate insulation and high voltage parts (see 6.2)

NOTE 3 – Parts are considered to be ACCESSIBLE if they could be touched in the absence of any covering which is not considered to provide suitable insulation (see 6.4).

NOTE 4 – Capacitor test may be required (see Table 6).

NOTE 5 – The determination methods are:
V = visual; R = rigid test finger; J = jointed test finger; P3 = pin 3 mm diameter; P4 = pin 4 mm diameter.

Supplementary information:

[6)] See Form A.4 in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6	**TABLE: PROTECTION AGAINST ELECTRIC SHOCK**													N/A [1)]
6.1.2	Exceptions													—
6.6.2	Terminals for external circuit													—
Item	Voltage			Current				Capacitance		10 s / 5 s test (NOTE)			Comments	
(see Table 6.2)	V r.m.s.	V peak	V d.c.	Test circuit A1/A2/A3	mA r.m.s.	mA peak	mA d.c.	μC	mJ	V	μC	mJ		

NOTE – A 10 s test is specified in 6.1.2 a) b). A 5 second test is specified in 6.10.3. The capacitance level versus voltage below the limits given from figure 3 of IEC 61010-1.

Supplementary information:

[1)] See Forms A.5 and A.6 in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6.5.2.6	TABLE: Transformer PROTECTIVE BONDING screen			N/A
ACCESSIBLE part under test	Test current (see NOTE) (A)	Voltage attained after 1 min (max. 10 V), (V)	Calculated resistance (maximum 0,1 Ω) (Ω)	Verdict
NOTE – Test current must be twice the value of the over current protection means of the winding. Test is specified in 6.5.2.6 a) or b).				
Supplementary information:				

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6.7	TABLE: Insulation requirements- Block diagram of system	N/A

See Form A.14 in the main test report.

Pollution degree ..... :		Overvoltage category ..... :	

Area	Location	Insulation type	WORKING VOLTAGE			Test voltage	Comments (NOTE 3)
		(NOTE 1)	RMS (V)	Peak (V)	Frequency (kHz)	(NOTE 2) (V)	
	See **Form A.14** in the main test report no. 20TH0250-61010-1_x						

NOTE 1 – Type of insulation:
BI = BASIC INSULATION
DI = DOUBLE INSULATION
PI = PROTECTIVE IMPEDANCE
RI = Reinforced INSULATION
SI = Supplementary INSULATION

see also Table 6.7B for further details

NOTE 2 - Types of voltage
Peak impulse test voltage (pulse)
r.m.s.
d.c.
peak

NOTE 3 - OVERVOLTAGE CATEGORIES or POLLUTION DEGREES which differ should be shown under "Comments"

Supplementary Information:

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6.7A	TABLE: Insulation requirements- Clearances and Creepage										N/A [3]
6.7.101	Insulation for field wiring terminals										—
Area	Location	Insulation type	WORKING VOLTAGE (NOTE 2)			Clearance		Creepage		CTI	Comments
	(See Table 6.7A)	(NOTE 1)	RMS (V)	Peak (V)	Frequency (kHz)	Required (mm)	Measured (mm)	Required (mm)	Measured (mm)		

NOTE 1 – refer to Table 6.7A for type of insulation shown in the insulation diagram NOTE 2 - to be used for definition of required insulation (see Table 6.7A)

Input supply voltage…….:	V	Hz

Supplementary information:

[3] See Form A.15 in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

6.8	**TABLE: Dielectric strength tests**		N/A [1)]
6.6	Connections to external circuits		
6.7.	Insulation requirements[2] (see Annex K)		
11.6	Specially protected equipment		
	Test site altitude ..... :	m	—
	Test voltage correction factor (see Table 10) ..... :		—

Location or references from Tables 4.4 and 6.7	Clause or sub-clause	Humidity Yes/No	Working voltage V	Test voltage r.m.s./peak/ d.c.	Comments (NOTE), Testing time Verdict

[1] Record the fault, test or treatment applied before the dielectric strength test. [2] Humidity preconditioning required.

NOTE: Test duration may be recorded.

Supplementary information:

[1)] See Form A.18 in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

8.2.2	**Table: Impact test**			N/A [1)]
	Material of enclosure..... :	Metal / non-metallic		—
	Corresponding IK-code ..... :			—
	Preparation for the test ..... :			—
	Cooled to (temperature)..... :		° C	—
Location		Comments		

8.3	**Drop test**			N/A
	Material of enclosure..... :	Metal / non-metallic		—
	Preparation for the test ..... :			—
	Cooled to (temperature)……:	° C		—
	Mass of equipment……:	kg		—
Free Fall	Lands in position		Comments	
1st trial				
2nd trial				

Dropping onto a face	Raised up to		Comments
Location	mm	30 °	
1)			
2)			

Dropping onto an edge or corner	Raised up to		Comments
Location	mm	30 °	
1)			
2)			

Supplementary information:
[1)] See Form A.21A in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

9	TABLE: Protection against the spread of fire		N/A [1)]
Item	Source of HAZARD or area of the equipment considered (circuit, component, liquid etc.)	Protection Method (9a, 9b or 9c)	Protection details
Supplementary information: [1)] See Form A.22 in the main test report.			

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

10.	**TABLE : Temperature Measurements**			N/A [2)]
10.1	Surface temperature limits - NORMAL CONDITION and / or SINGLE FAULT CONDITION			
10.3	Other temperature measurements			
Operating conditions:				
Frequency (Hz) .....:		Test room ambient temperature (A) ..... :		°C
		Test room ambient temperature (B) ..... :		
Voltage (V) .....:		Test duration (hours: min) ..... :		

Part / Location	t_m (°C)	t_c (°C)	t_{max} (°C)	Comments

NOTE 1 – Testing is to be conducted at rated ambient temperature except where allowed testing can be conducted a room ambient and adjusted as follows:

t_m = measured temperature

t_c = t_m corrected (t_m–*[A or B]* + **40 °C** or max. RATED ambient

t_{max} = maximum permitted temperature

See 10.4.1.101 for three methods for testing panel mounted equipment.

NOTE 2 - see also 14.1 with reference to component operating conditions

NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Table

NOTE 4 - see Table 10.2 for details of winding temperature measurements

Supplementary information:

Maximum Rated Ambient _____.

[2)] See Form A.26A in the main test report.

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

10.2	**TABLE: Temperature of windings Resistance method Temperature Measurements**						N/A
Operating conditions .:							
Frequency (Hz) .....:		Test room ambient temperature (ta1/ta2) :					°C (initial / final)
Voltage (V) .....:		Test duration (hours: min) ..... :					
Part / Designation	R_{cold} (Ω)	R_{warm} (Ω)	Current (A)	tr (K)	tc (°C)	tmax (°C)	Comments

NOTE 1- R_{cold} = initial resistance R_{warm} = final resistance

t_r = temperature rise $t_c = t_r$ corrected ($t_c = t_r - \{ t_{a2} - t_{a1} \} + [40\ °C$ or max RATED ambient])

t_{max} = maximum permitted temperature

NOTE 2 - Indicate insulation class (IEC 60085) under comments (optional)

NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Table

Supplementary information:

IEC 61010-2-201		
Clause	Requirement — Test	Verdict

11	**TABLE : Protection against HAZARDS from fluids**	N/A [5)]
8	**Mechanical resistance to shock and impact**	N/A

Voltage tests can be carried out once after performing the tests of clause 8 and clause 11. However, if voltage tests are carried out separately after each set of tests, two forms can be used.

Location (see Table 6.7.A)	Clause 11 tests			Comments
	IEC 60529 (11.6)	Working voltage, (V)	Test voltage (V)	

NOTE 1 - t_m = measured temperature

$t_c = t_m$ corrected ($t_m - t_a$ + **40 °C** or max. RATED ambient)

t_{max} = maximum permitted temperature

NOTE 2 - see also 14.1 with reference to component operating conditions

NOTE 3 - Record values for NORMAL CONDITION and / or SINGLE FAULT CONDITION in this Table

NOTE 4 - see Table 10.2 for details of winding temperature measurements

Supplementary information:

[5)] See Form A.30 in the main test report.

IEC 61010-2-201			
Clause	Requirement – Test	Result — Remark	Verdict

14	TABLE: List of critical components				N/A [2)]
Component/ Part No.	**Manufacturer/ Trademark**	**Type No./model No./**	**Technical data**	**Standard No./, Editio**	**Mark(s) & Certificates of conformity [1]**

Supplementary information:
1) An asterisk indicates a mark which assures the agreed level of surveillance. See Licenses and Certificates of Conformity for verification.
[2)] See TABLE 1.A in the main test report no. 20TH0250-61010-1_x

IEC 61010-2-201			
Clause	Requirement – Test	Result — Remark	Verdict

	TABLE: Additional or special tests conducted		N/A [1)]
Clause and name of test	Test type and condition	Observed results	—
Supplementary information: [1)] See Form A.43 in the main test report.			

List of test equipment used:

Clause	Measurement / testing	Testing / measuring equipment / material used, (Equipment ID)	Range used	Last Calibration date	Calibration due date
		see main test report			

Attachment No. 1
National Differences

National Differences: Canada

IEC 61010-2-201:2017 ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 61010-2-201:2017** **CANADIAN NATIONAL DIFFERENCES** SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE PART 2-201: PARTICULAR REQUIREMENTS FOR CONTROL EQUIPMENT			
Differences according to ..... : CAN/CSA C22.2 No. 61010-2-201:18			
Attachment Form No ..... : According to OD-2020, Subclause 3.3.3 **Attachment Originator** ..... : CSA Group **Master Attachment** ..... : Date, according to OD-2020, Subclause 3.3.4			
Copyright © 2017 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved.			
Clause	**Special national conditions**		—
—	Replace all references to “IEC 61010-1” with “CAN/CSA C22.2 No. 61010-1”		—
1	**Scope and object**		P
1.1.	Scope		—
1.1.1	Equipment included in the scope		P
	Equipment is intended to be installed or used in accordance with CSA C22.1, Canadian Electrical Code, Part 1.		P
1.1.2	Equipment excluded from scope		P
	Equipment is not covered by CAN/CSA C22.2 No 14 for industrial control equipment		P

IEC61010_2_201D ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict
ATTACHMENT TO TEST REPORT **IEC 61010-2-201** **US NATIONAL DIFFERENCES** SAFETY REQUIREMENTS FOR ELECTRICAL EQUIPMENT FOR MEASUREMENT, CONTROL, AND LABORATORY USE PART 2-201: PARTICULAR REQUIREMENTS FOR CONTROL EQUIPMENT			
Differences according to.....: ANSI/UL61010-2-201 (2nd Ed.)			
TRF template used: ..... : IECEE OD-2020-F3, Ed. 1.1			
Attachment Form No. .....: US_ND_IEC61010_2_201D **Attachment Originator .....**: UL (US) **Master Attachment** .....: 2020-11-12			
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Clause	**National Differences**		—
5	**Marking and documentation**		—
5.3	Open equipment exempted from the Durability of markings test (unless cleaning in the area of required markings is recommended by the manufacturer).	The equipment under test is enclosed equipment	N/A

— END OF REPORT —