
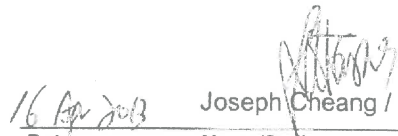


Prüfbericht - Nr.: 14002128 004		Seite 1 von 62	
Test Report No.:		Page 1 of 62	
Auftraggeber: Client:	Alltronics Tech. Manufacturing Ltd. Room 1108, 11/F., Eastwood Centre, 5 A Kung Ngam Village Road, Shau Kei Wan, Hong Kong		
Gegenstand der Prüfung: Test item:	Adaptor		
Bezeichnung: Identification:	WT57-2401000AE	Serien-Nr.: Serial No.:	Engineering Samples
Wareneingangs-Nr.: Receipt No.:	00130318211-001 to 007	Eingangsdatum: Date of receipt:	18.03.2013
Zustand des Prüfgegenstandes bei Anlieferung: Condition of test item at delivery:		Samples were ok for testing and not damaged	
Prüfort: Testing location:	TÜV Rheinland Hong Kong Ltd. 8/F., First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
Prüfgrundlage: Test specification:	EN 61558-2-6: 2009 EN 61558-1: 2005 + A1: 2009 ZEK 01.4-08 / 11.11		
Prüfergebnis: Test Result:	Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n). The test item passed the test specification(s).		
Prüflaboratorium: Testing Laboratory:	TÜV Rheinland Hong Kong Ltd. 8-10/F., Goldin Financial Global Square, 7 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong		
geprüft/ tested by:		kontrolliert/ reviewed by:	
			
Datum Date	Name/Stellung Name/Position	Unterschrift Signature	Datum Date
Apr. 16, 2013	Andy Zhu		16 Apr 2013
			Joseph Cheang / Technical Certifier
Sonstiges/ Other Aspects:			
For TÜV Rheinland GS mark standard upgrade approval			
There are no parts or materials that are frequently touched and held for a longer period of time. Therefore no parts or materials are relevant for PAH evaluation.			
Tested according European harmonized standards.			
All relevant EK decisions have been considered.			
"Foreseeable use was considered. Currently neither a safeguard clause procedure has been invoked nor is an increase in accidents known for this/these product(s)."			
The EMF assessment report (1 page) is attached to report 14002128 004.			
Abkürzungen:	P(ass) = entspricht Prüfgrundlage	Abbreviations:	P(ass) = passed
	F(ail) = entspricht nicht Prüfgrundlage		F(ail) = failed
	N/A = nicht anwendbar		N/A = not applicable
	N/T = nicht getestet		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 item. 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 safety mark on this or similar products.</i>			



TEST REPORT IEC 61558-2-6 Safety of power transformers, power supplies, reactors and similar products Part 2-6: Particular requirements and tests for safety isolating transformers and power supply units incorporating safety isolating transformers	
Report Reference No.	: 14002128 004
Date of issue	: See page 1
Total number of pages	: See page 1
CB Testing Laboratory	: TÜV Rheinland Hong Kong Ltd.
Address	: 8/F., First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong
Applicant' s name	: Alltronics Tech. Manufacturing Ltd.
Address	: Room 1108, 11/F., Eastwood Centre, 5 A Kung Ngam Village Road, Shau Kei Wan, Hong Kong
Test specification:	
Standard.....	: IEC 61558-2-6:2009 (Second Edition) Used in conjunction with IEC 61558-1:2005 (Second Edition) + A1:2009
Test procedure	: GS
Non-standard test method	: N/A
Test Report Form No.	: IEC61558_2_6B
Test Report Form(s) Originator.....	: VDE Testing and Certification Institute
Master TRF	: 2009-11
Copyright © 2009 IEC System for Conformity Testing and Certification of Electrical Equipment (IECEE), Geneva, Switzerland. All rights reserved. This publication may be reproduced in whole or in part for non-commercial purposes as long as the IECEE is acknowledged as copyright owner and source of the material. IECEE takes no responsibility for and will not assume liability for damages resulting from the reader's interpretation of the reproduced material due to its placement and context. If this Test Report Form is used by non-IECEE members, the IECEE/IEC logo and the reference to the CB Scheme procedure shall be removed. This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in	
Test item description	: Adaptor
Trade Mark.....	: Hunter
Manufacturer.....	: Same as applicant / client
Address.....	: Same as applicant / client
Model/Type reference	: WT57-2401000AE
Rating(s)	: Input: AC 230V 50Hz 200mA Output: AC 24V 1000mA 24VA

Testing procedure and testing location: see page 1 & 2
<input type="checkbox"/> CB Testing Laboratory: Testing location/ address :
<input type="checkbox"/> Associated CB Laboratory: Testing location/ address : Tested by (name + signature) : Approved by (+ signature) :
<input type="checkbox"/> Testing procedure: TMP Tested by (name + signature) : Approved by (+ signature) : Testing location/ address :
<input type="checkbox"/> Testing procedure: WMT Tested by (name + signature) : Witnessed by (+ signature)..... : Approved by (+ signature) : Testing location/ address :
<input type="checkbox"/> Testing procedure: SMT Tested by (name + signature) : Approved by (+ signature) : Supervised by (+ signature)..... : Testing location/ address :
<input type="checkbox"/> Testing procedure: RMT Tested by (name + signature) : Approved by (+ signature) : Supervised by (+ signature)..... : Testing location/ address :

Summary of testing:

The test samples are pre-production without serial number; The appliance is tested according to the standard mentioned in the cover page.

The requirement of the standard EN/IEC 61558-2-6: 2009 and EN/IEC 61558-1: 2005 + A1: 2009 has also been taken into account.

Except clause 14, 15.5, 18.5, 20.11 testing are performed during this standard upgrade, all test results are extracted from TUV test report no. 14002128 001 to 002

Tests performed (name of test and test clause):

- 8.15 Durability of Marking Test
- 9.1 Protection Against Electric Shock
- 11 Output voltage and output current under load
- 12 No-load output voltage
- 14 Heating Test
- 15.5 Overload Protection – Fail-Safe
- 16: Mechanical Strength test
- 17.1 Degrees of protection (IP20) by enclosure test
- 17.2 Humidity Treatment
- 18.2 Insulation Resistance
- 18.3 Dielectric Strength Test
- 18.4 Double voltage, double frequency test
- 18.5 Touch Current Test
- 20.11
- 22.9.5: cord pull test
- 26 Creepage Distance, Clearance and Distance Through Insulation
- 27.1 Ball Pressure Test
- 27.3 Glow Wire Test

Testing location:

CBTL: 8/F., First Group Centre, 14 Wang Tai Road, Kowloon Bay, Kowloon, Hong Kong

Summary of compliance with National Differences:

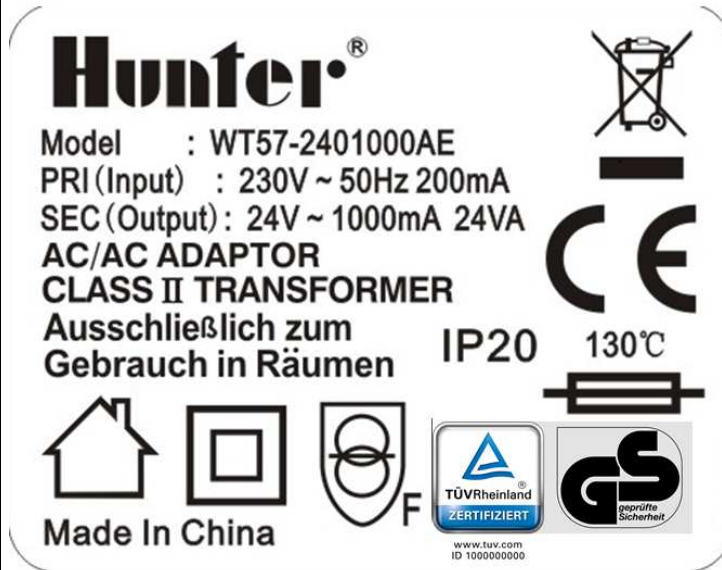
DE, European Group Differences

DE = Germany

For European Group Differences and National Differences see end of this test report.

Copy of marking plate:


The following information was silk-screen directly on the top enclosure of the appliance.




The following German warning sentence for power supply cord in case was damaged will be silk screening on side enclosure directly: "Eine beschädigte Anschlußleitung dieses Netzgerätes muß vom Hersteller oder dessen Kundendienst oder einer gleichermaßen qualifizierten Person ersetzt werden, um eine Gefährdung zu vermeiden"

Test item particulars:	
Type of transformers	Safety Isolating Transformer
Application	Portable, associated
Protection against electric shock	Class II
Short-circuit protection.....	Yes
inherently short-circuit proof	No
non-inherently short-circuit proof	No
non short-circuit proof	No
fail safe	Yes
Protection index	Ordinary(IP20)
Other characteristics.....	Continuous operation
Rated ambient temperature ta (°C)	25
Short-circuit voltage (V)	N/A
Possible test case verdicts:	
- test case does not apply to the test object	N/A (not applicable)
- test object does meet the requirement	P (Pass)
- test object does not meet the requirement	F (Fail)
Testing	
Date of receipt of test item.....	Mar 2013
Date (s) of performance of tests	Apr 2013
General remarks:	
<p>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 testing laboratory. "(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. All measurements are corrected to rated-ambient temperature at 25°C inside this test report. 7 pages of photo-documentation were provided for this test report. Attached 3 pages of equipment lists.</p> <p>Factory: Alltronics Manufacturing (Shenzhen) Limited Block B, Guangtian Road No. 272, Tang Xia Yong Village Songgang Town, Ba'an District, Shenzhen City, Guangdong Province, P.R. China</p>	
General product information:	
<ul style="list-style-type: none"> • It is a Class II desk top type linear AC to AC adapter provides with output cord set and single pole accessible output plug designed for generally purpose. The transformer core size is EI-57x31mm with winding insulation declares as class B, a Tf 130°C thermal-link(fuse) was installed in primary winding of transformer for short-circuit or overload protection. • The test items are pre-production samples without serial models. • The specified maximum ambient is 25°C. 	




IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

8	MARKING AND OTHER INFORMATION		P
8.1	Transformer marked with:		P
	a) rated supply voltage or voltage range (V)	See copy of marking plate	P
	b) rated output voltage (V)	See copy of marking plate	P
	c) rated output (VA, kVA or W)	See copy of marking plate	P
	d) rated output current (A)	See copy of marking plate	P
	e) rated frequency (Hz)	See copy of marking plate	P
	f) rated power factor (if not 1)	Max. rated output < 25VA	N/A
	g) symbol AC for alternating current, or DC for direct current-output	AC symbol	P
	h) symbol for safety isolating transformer (electrical function)		P
	i) manufacturer's name or trademark or name of the responsible vendor	Trademark: Hunter	P
	j) model or type reference	WT57-2401000AE	P
	k) vector group according to IEC 60076 for three-phase transformer		N/A
	l) symbol for Class II		P
	m) symbol for Class III		N/A
	n) index IPXX if other than IP00	See copy of marking plate	P
	o) rated max. ambient temperature t_a (if not 25 °C)	25°C	N/A
	p) rated minimum ambient temperature $t_{a \text{ min}}$, if <10°C and if a temperature sensitive device is used		N/A
	q) short-time duty cycle: operating time Intermittent duty cycle: operating and resting time (e.g. 5min/30min)		N/A
	r) for tw-marked transformers marked with the rated max. operating temperature, increased by multiples of 5 (e.g. tw 120; tw 125)		N/A
	s) transformers used with forced air cooling shall be marked with "AF" in m/s		N/A
	t) Information from the manufacturer to the purchaser (data sheet) :		N/A
	- short-circuit voltage (% rated supply voltage) for stationary transformers > 1000 VA		N/A
	- electrical function of the transformer		N/A
8.2	Marking for transformers IP00 or for associated transformers: type and trademark, instruction sheets	Necessary information are mentioned on rating label	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

8.3	Adjusted voltage easily and clearly discernible		N/A
8.4	For each tapping or winding: rated output voltage and rated output		N/A
	necessary connections clearly indicated		N/A
8.5	For short-circuit proof transformers or non-inherently short-circuit proof transformers:		N/A
	Rated current (A or mA) and symbol for time current characteristics of the fuses for non-inherently short-circuit proof transformer with incorporated fuses and non-short-circuit proof transformer	Thermal-link(fuse) used.	N/A
	Manufacturer's model or type reference and rating of the device for non-inherently short-circuit proof transformers with incorporated replaceable protective device (other than fuses)		N/A
	Construction sheet for transformers with replaceable protective device (other than fuses) information with information about the replacement.		N/A
8.6	Terminals for neutral: "N"	No terminals intended exclusively for neutral conductor	N/A
	Terminal for protective earth marked with earthing symbol		N/A
	Identification of input terminals: "PRI"		N/A
	Identification of output terminals: "SEC"		N/A
	Symbol for any point/terminal in connection with frame or core		N/A
8.7	Indication for correct connection	AC output	N/A
8.8	Instruction sheet for type X, Y, Z attachments	Type Y; warning sentence in German printed on side enclosure of appliance	P
8.9	Transformer for indoor use shall be marked with the relevant symbol.		P
8.10	Symbol for Class II construction not confused with maker's name or trademark.		P
	Class II transformer with parts to be mounted – delivered with all parts for class II after mounting.		N/A
	Symbol for class II transformer placed on the part which provide class II.		N/A
8.11	Correct symbols:		P
	Volts	V	P
	Amperes	A (mA)	P
	Volt amperes (or volt-amperes reactive for reactors)	VA or (VAR)	P
	Watts	W	N/A
	Hertz	Hz	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Input	PRI	P
	Output	SEC	P
	Direct current		N/A
	Neutral	N	N/A
	Single-phase a.c.	~	P
	Three-phase a.c.	3 ~	N/A
	Three-phase and neutral a.c.	3/N ~	N/A
	Power factor	cos φ	N/A
	Class II construction		P
	Class III construction		N/A
	Fuse-link		N/A
	Rated max. ambient temperature		N/A
	Frame or core terminal		N/A
	Protective earth		N/A
	IP number	IP20	P
	Earth (ground for functional earth)		N/A
	For indoor use only		P
	tw5 YYY		N/A
	tw10 YYY		N/A
	twx YYY		N/A
	Fail-safe safety isolating transformer IEC 61558-2-6:09		P
	Non-short-circuit-proof safety isolating transformer IEC 61558-2-6:09		N/A
	Short-circuit-proof safety isolating transformer (inherently or non-inherently) IEC 61558-2-6:09		N/A
8.12	Figures, letters or other visual means for different positions of regulating devices and switches		N/A
	OFF position indicated by figure 0		N/A
	Greater output, input etc. indicated by higher figure		N/A
8.13	Marking not on screws or other easily removable parts		P
	Marking clearly discernible (transformer ready for use)		P
	Marking for terminals clearly discernible if necessary after removal of the cover		N/A
	Marking for terminals: no confusion between input and output	AC output	N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Marking for interchangeable protective devices positioned adjacent to the base		N/A
	Marking for interchangeable protective devices clearly discernible after removal of cover and protective device		N/A
8.14	Special information for installation (in the catalogue, data sheet, or instruction sheet) if necessary:	Normal use, all necessary information are mentioned on rating label	N/A
	For non-inherently short-circuit proof transformers with non-self-resetting or non replaceable devices (weak-point, thermal link): The device can not be resetted or replaced		N/A
	For transformers generating a protective earth conductor current of 10 mA (see also cl. 18.5.2): The installation shall be made according to the wiring rules.		N/A
	For associated- and IP00-transformers: At 10% over or under voltage in the supply voltage, the rated output of the transformer shall be selected accordingly.		N/A
	For stationary transformers exceeding 1000 VA: The short circuit voltage in % of the rated voltage		N/A
	For all transformers the electrical function: An information about the electrical function of the transformer (e.g. inherently short circuit proof safety isolating transformer)		N/A
	For associated- and IP00-transformers: The max. abnormal winding temperature		N/A
	For tw-transformers: The specific constant S is (e.g. S6 says S = 6000)		N/A
	For transformers with more than one output winding, not for series or parallel connection		N/A
	– an information in the in the instruction sheet: the transformer is not intended for series/parallel connection		N/A
	For IP00 – Transformers the test of 27.2 is not performed. The result may be affected by the enclosure in the final application.		N/A
8.15	Marking durable and easily legible		P

9	PROTECTION AGAINST ELECTRIC SHOCK		P
9.1	Protection against contact with hazardous live parts		P
9.1.1	A live part is not a hazardous live part if:		P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– the it is separated from the supply by double or reinforced insulation		P
	– the requirements of 9.1.1.1 and 9.1.1.2 are fulfilled.		P
9.1.1.1	The touch voltage is ≤ 35 V(peak) a.c. or ≤ 60 Vd.c.	Measured no-load voltage: max. 36,7Vpeak a.c.	N/A
9.1.1.2	If the touch voltage is > 35 V(peak)a.c. or > 60 V d.c., the following requirements shall be fulfilled:		P
	The touch current shall not exceed:		P
	– for a.c. 0,7 mA (peak)	See cl. 18.5	P
	– for d.c. 2,0 mA (see Annex J)		N/A
	In addition, when a capacitor is connected to live parts:		—
9.1.1.2.1	discharge: $< 45 \mu\text{C}$ (between 60 V and 15 kV)		N/A
9.1.1.2.2	energy: ≤ 350 mJ (voltage > 15 kV)		N/A
9.1.2	Transformers shall have an adequate protection against accessibility to hazardous live parts:	Top and bottom enclosure fixed by ultrasonic welding	P
	The enclosure of class I and class II transformers gives a adequate protection against accidental contact with hazardous live parts.		P
	Class I transformers: accessible parts are separated from hazardous live parts by at least basic insulation.		N/A
	Class II transformers: no accessibility to basic insulation, or conductive parts separated from hazardous live parts by basic insulation.		P
	Hazardous live parts are not accessible after removal of detachable parts.	No detachable parts.	N/A
	Hazardous live parts are not accessible after removal of detachable parts except for:	No detachable parts.	N/A
	– lamps having caps larger B9 and E10		N/A
	– type D fuse holder		N/A
	Lacquers, enamel, paper, cotton, oxide film on metal parts not used for protection against accidental contact with hazardous live parts:		P
	Shafts, handles, operating levers, knobs are not hazardous life parts.		N/A
	Compliance is checked by inspection and by relevant tests according to IEC 60 529		P
	Class II transformers and Class II parts of Class I construction are tested with the test pin (fig. 3)		P
	Hazardous live parts shall not be touchable by test finger (fig. 2)		P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	for Class II transformers: metal parts separated by basic insulation from hazardous live parts not touchable by test finger		P
	hazardous live parts shall not be touchable with the test pin		P
9.1.3	Accessibility of non hazardous live parts		P
	Non hazardous live parts of the output circuit may be accessible if they are isolated from the input circuit by double or reinforced insulation and if the following conditions are fulfilled:		P
	– The no load output voltage is ≤ 35 V peak a.c. or ≤ 60 V ripple free d.c., both poles are accessible		N/A
	– The no load output voltage is > 35 V peak a.c. or > 60 V ripple free d.c., only one pole are accessible	Single pole accessible output plug used.	P
9.2	Transformers with primary supply plug: 1 s after the interruption of the supply the voltage between the pins do not exceed 35 V (peak) a.c. or 60 V ripple free d.c.	No X-capacitor used.	N/A
	Transformers without a primary supply plug: 5 s after the interruption of the supply the voltage between the input terminals do not exceed 35 V (peak) a.c. or 60 V ripple free d.c.		N/A
	The following tests are required :		N/A
	If the nominal capacitance is $\leq 0,1 \mu\text{F}$ – no test is conducted.		N/A
	– 10 times switch the supply source on and off, or use a special equipment for to switch off at the most unfavourable electrical angle		N/A
	If the measured voltage is > 60 V ripple free d.c., the discharge must be $\leq 45 \mu\text{C}$.		N/A

10	CHANGE OF INPUT VOLTAGE SETTING		N/A
	Voltage setting not possible to change without a tool	Not adjustable	N/A
	Different rated supply voltages:		N/A
	– indication of voltage for which the transformer is set, is discernible on the transformer.		N/A

11	OUTPUT VOLTAGE AND OUTPUT CURRENT UNDER LOAD		P
11.1	Difference from rated value (without rectifier; with rectifier):	Without rectifier.	P
	a) inherently short-circuit proof transformers with one rated output voltage for output voltage: a.c. $\leq 10\%$; d.c. $\leq 15\%$		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	b) inherently short-circuit proof transformers with one more than 1 rated output voltage for highest output voltage: a.c. \leq 10%; d.c. \leq 15%		N/A
	c) idem for other output voltages: a.c. \leq 15%; d.c. \leq 20%		N/A
	d) other transformers for output voltages: a.c. \leq 5%; d.c. \leq 10%	(see appended table)	P

12	NO-LOAD OUTPUT VOLTAGE (see supplementary requirements in Part 2)		P
	Remark: with rectifier measuring on both sides of the rectifier	Only output terminal can be accessible.	N/A
12.101	No-load output voltage < 50 V a.c. or < 120 V d.c. (EN 61558-2-6:97) for independent transformers the limitation applies, even if output windings are connected in series	(see appended table)	P
12.102	Difference between output voltage at no load and output (EN 61558-2-6:97) Rated output (VA) Rated value %	(see appended table)	P

13	SHORT-CIRCUIT VOLTAGE		N/A
	Difference from marking for short-circuit voltage \leq 20%		N/A

14	HEATING		P
14.1	General requirements		P
	No excessive temperature in normal use		P
	Room temperature: rated ambient temperature $t_{a\pm 5} \text{ }^{\circ}\text{C}$	25°C	—
	Type X, Y, Z attachments: 1 pull (5 N) to the connection windings		P
	U _{pri} (V): 1,1 times rated supply voltage loaded with rated impedance – for independent transformers	See appended table 14	—
	U _{pri} (V): 1,1 times rated supply voltage: with I sec (A), measured with rated impedance and 1,0 times of the rated supply voltage for others than independent transformers		—
	Type X, Y, Z attachments: 1 pull (5 N) to the connection windings		P
	Max. temperature windings	(see appended table)	P
	– Class A: \leq 100 °C		N/A
	– Class E: \leq 115 °C		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– Class B: ≤ 120 °C	See appended table 14	P
	– Class F: ≤ 140 °C		N/A
	– Class H: ≤ 165 °C		N/A
	– other classes		N/A
	Temperature of external enclosures of stationary transformers:		N/A
	– metal: ≤ 70 °C		N/A
	– other material: ≤ 80 °C		N/A
	Temperature of external enclosure of stationary transformer ≤ 85 °C (not touchable with the IEC test finger)		N/A
	Temperature of external enclosures, handles, etc. of portable transformers:	See appended table 14	P
	– continuously held parts of metal: ≤ 55 °C		N/A
	– continuously held parts of other material: ≤ 75 °C		N/A
	– not continuously held parts of metal: ≤ 60 °C		N/A
	– not continuously held parts of other material: ≤ 80 °C	See appended table 14	P
	Temperature of terminals for external conductors ≤ 70 °C		N/A
	Temperature of terminals of switches ≤ 70 °C		N/A
	Temperature of internal and external wiring:		P
	– rubber: ≤ 65 °C		N/A
	– PVC: ≤ 70 °C	See appended table 14	P
	Temperature of parts where safety can be affected:		N/A
	– rubber: ≤ 75 °C		N/A
	– phenol-formaldehyde: ≤ 105 °C		N/A
	– urea-formaldehyde: ≤ 85 °C		N/A
	– impregnated paper and fabric: ≤ 85 °C		N/A
	– impregnated wood: ≤ 85 °C		N/A
	– PVC, polystyrene and similar thermoplastic material: ≤ 65 °C		N/A
	– varnished cambric: ≤ 75 °C		N/A
	Temperature rise of supports ≤ 85 °C	See appended table 14	P
	Temperature of printed boards:		N/A
	– bonded with phenol-formaldehyde: ≤ 105 °C		N/A
	– melamine-formaldehyde: ≤ 105 °C		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– phenol-furfural: $\leq 105\text{ °C}$		N/A
	– polyester: $\leq 105\text{ °C}$		N/A
	– bonded with epoxy: $\leq 140\text{ °C}$		N/A
	Electric strength between input and output windings (18.3, 1 min); test voltage (V)	4200V	P
14.2	Application of 14.1 or 14.3 according to the insulation system		P
14.2.1	Class of isolating system (classified materials according to IEC 60 085 and IEC 60 216)	Class B	P
14.2.2	No classified material, or system but the measured temperature does not exceed the value of Class A		N/A
14.2.3	No classified material or system but the measured temperature exceeds the value for Class A, the live parts of the transformers are submitted to the test of 14.3		N/A
14.3	Accelerated ageing test for undeclared class of isolating system		N/A
	Cycling test (10 cycles):		N/A
	– measuring of the no-load input current (mA)		N/A
14.3.1	– heat run (temperature in table 2)		N/A
14.3.2	– vibration test: 30 min; amplitude 0,35 mm; frequency range: 10 Hz, 55 Hz, 10 Hz		N/A
14.3.3	– moisture treatment (48 h, 17.2)		N/A
14.3.4	Measurements and tests at the beginning and after each test:		N/A
	– deviation of the no-load input current, measured at the beginning of the test is $\leq 30\%$		N/A
	– insulation resistance acc. cl.18.1 and 18.2		N/A
	– electric strength, no breakdown (18.3); 2 min; test voltage 35% of specified value (table VI)		N/A
	– Transformers (50 or 60 Hz version) are tested after the dielectric strength test as follows: under no load; duration: 5 min; $U_{pri}(V)$: 1,2 times rated supply voltage; frequency (Hz): 2 times rated frequency		N/A

15	SHORT-CIRCUIT AND OVERLOAD PROTECTION		P
15.1	General		P
	Tests direct after 14.1 at the same t_a and without changing position.	(see appended table)	P
	Supply voltage between 0,9 times and 1,1 times of the rated supply voltage	(see appended table)	—

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Transformer with rectifier tests of 15.2 and 15.3 at the input and the output terminals of the rectifier.	Fail-safe	N/A
	Transformers with more than one output winding or tapping, all windings tested with normal load, the winding with the highest temperature is short circuited.		N/A
	Winding protected inherently (15.2)		N/A
	– Max. temperature of winding protected inherently (insulation class): ≤ 150 °C (A); ≤ 165 °C (E); ≤ 175 °C (B); ≤ 190 °C (F); ≤ 210 °C (H)		N/A
	Winding protected by protective device:		N/A
	– a) Test according 15.3.2 - 15.3.3 – 15.3.4: max. temperature of winding during the time required or the time T given in table 4 (a) (insulation class): ≤ 200 °C (A); ≤ 215 °C (E); ≤ 225 °C (B); ≤ 240 °C (F); ≤ 260 °C (H)		N/A
	– b) Test according 15.3.1: max. temperature of winding during the first hour, peak value (insulation class): ≤ 200 °C (A); ≤ 215 °C (E); ≤ 225 °C (B); ≤ 240 °C (F); ≤ 260 °C (H)		N/A
	– Test according 15.3.1: max. temperature of winding after first hour, peak value (insulation class): ≤ 175 °C (A); ≤ 190 °C (E); ≤ 200 °C (B); ≤ 215 °C (F); ≤ 235 °C (H)		N/A
	– Test according 15.3.1: max. temperature of winding after first hour, arithmetic mean value (insulation class): ≤ 150 °C (A); ≤ 165 °C (E); ≤ 175 °C (B); ≤ 190 °C (F); ≤ 210 °C (H)		N/A
	Max. temperature of external enclosures (accessible by test finger) ≤ 105 °C		N/A
	Max. temperature of insulation of wiring (rubber and PVC) ≤ 85 °C		N/A
	Temperature rise of supports ≤ 105 °C		N/A
15.2	For inherently short-circuit proof transformers and for transformers with rectifiers test by short circuit of the output winding at rated supply voltage x 1,1: temperature rises ≤ values in table 3		N/A
15.3	For non-inherently short-circuit proof transformers and for transformers with rectifiers: temperature rises ≤ values in table 3		N/A
15.3.1	Output terminals short-circuited: protection device operates, test at 0,9 ... 1,1 of the rated supply voltage		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
15.3.2	If protected by a fuse accordance with either IEC 60 269-2 or IEC 60 269-3, or a technical equivalent fuse, the transformer is loaded as in table 4.		N/A
15.3.3	If protected by a fuse accordance with either IEC 60 127 or ISO 8820, or a technical equivalent fuse, the transformer is loaded with the current as specified for the longest pre arcing time. <i>If protected by a miniature fuses in accordance to IEC 60127, 1,5 times of the rated fuse, until steady state condition (in addition)</i>		N/A
15.3.4	If protected by a circuit-breaker according to IEC 60 898 the transformer is loaded with a current equal to 1,45 times the value of the circuit-breaker rated current		N/A
15.3.5	If other overload protection than a fuse (IEC 60 127) or a circuit-breaker (IEC 60 898) test with 0,95 times of operating current		N/A
	If an internal weak point is used, the test must be repeated with two new samples. The two additional samples works similar to the first sample. Temperatures in the limit of table 3		N/A
15.3.6	If thermal cut-outs, test with 0,95 times of operating current		N/A
15.4	For non-short-circuit proof transformers: temperature rises \leq values in table 3, tests as indicated in 15.3		N/A
15.5	For fail-safe transformers:		P
	– Upri (V): 1,1 times rated supply voltage	See appended table	—
	– Isec (A): 1,5 times rated output current	See appended table	—
	– time until steady-state conditions t1 (h)	See appended table	—
	– time until failure t2 (h): \leq t1; \leq 5 h	See appended table	P
	During the test:		P
	– no flames, molten material, etc.		P
	– temperature of enclosure \leq 175 °C		P
	– temperature of plywood support \leq 125 °C		P
	After the test:		P
	– electric strength (Cl. 18, 1 min, test voltage: 35% of specified value); no flashover or breakdown for primary-to-secondary only for safety isolating, isolating and separating transformer and for primary-to-body for all kinds of transformer	L/N to output or enclosure: AC 1470V	P
	– bare hazardous live parts not accessible by test finger through holes of enclosure		P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

16	MECHANICAL STRENGTH		P
16.1	General		P
	After tests of 16.2, 16.3 and 16.4		P
	– no damage		P
	– hazardous live parts not accessible by test pin according to 9.2		P
	– no damage for insulating barriers		P
	– handles, levers, etc. have not moved on shafts		N/A
16.2	Transformers (stationary and portable s. 16.1)		P
	For stationary and portable transformers: 3 blows, impact energy 0,5 Nm	Portable	P
16.3	Portable transformers (except of plug in transformers)		P
	For portable transformers: 100 falls, 25 mm		P
16.4	Transformers with integrated pins (plug in transformers), the following tests are carried out:		N/A
	a) plug-in transformers: tumbling barrel test: 50 x ≤ 250 g; 25 x > 250 g		N/A
	b) torque test of the plug pins with 0,4 Nm		N/A
	c) pull force according to table 5 for each pin		N/A

17	PROTECTION AGAINST HARMFUL INGRESS OF WATER AND MOISTURE		P
17.1	Degree of protection (IP code marked on the transformer)	IP20	P
	Test according to 17.1.1 and for other IP ratings test according to IEC 60 529:		P
	– stable operating temperature before starting the test for < IPX8		N/A
	– transformer mounted and wired as in normal use		P
	– fixed transformer mounted as in normal use by the tests according to 17.1.1 A to L		N/A
	– portable transformers placed in the most unfavourable position and wired as in normal use		P
	– glands tightened with a torque equal to two-thirds of 25.6		N/A
	After the tests:		P
	– dielectric strength test according to 18.3	See clause 18.3	P
	Inspection:		P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	a) in dust-proof transformers no deposit of talcum powder		N/A
	b) no deposit of talcum powder inside dust-tight transformers		N/A
	c) no trace of water on live parts except SELV parts below 15 V ac or 25 V dc or insulation if hazard for the user or surroundings no reduction of creepage distances		N/A
	d) no accumulation of water in transformers \geq IPX1 so as to impair safety		N/A
	e) no trace of water entered in any part of water-tight transformer		N/A
	f) no entry into the transformer by the relevant test probe		N/A
17.1.1	Tests on transformers with enclosure:		P
	A) Solid-object-proof transformers:	IP20	P
	- 2 IP2X test finger (IEC 60 529) and test pin (fig. 3)		P
	B) Solid-object-proof transformers:		N/A
	- wire 2,5 mm; force 3 N		N/A
	- IP4X, wire 1 mm; force 1 N		N/A
	C) Dust-proof transformers, IP5X; dust chamber according to IEC 60 529, fig. 2:		N/A
	a) transformer has operating temperature		N/A
	b) transformer, still operating, is placed in the dust chamber		N/A
	c) the door of the dust chamber is closed		N/A
	d) fan/blower is switched on		N/A
	e) after 1 min transformer is switched off for cooling time of 3 h		N/A
	D) Dust-tight transformers (IP6X) test according to C)		N/A
	E) Drip-proof transformers (IPX1) test according to fig. 3 of IEC 60 529 for 10 min		N/A
	F) Rain-proof transformers (IPX2) test according to fig. 3 of IEC 60 529 for 10 min in operation, any angle up to 15°		N/A
	G) Spray proofed transformers (IPX3) test according to fig. 4 of IEC 60 529 for 10 min in operation and 10 min switched off, time for complete oscillation (2 x 120°) is 4 sec.		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	H) Splash-proof transformers (IPX4) test according to fig. 4 of IEC 60 529 (see F) for 10 min in operation and 10 min switched off (the tube shall oscillate $\approx 360^\circ$)		N/A
	I) Jet-proof transformer (IPX5) test according to fig. 6 of IEC 60 529 (nozzle 6,3mm)		N/A
	J) Powerful Jet-proof transformer (IPX6) test according to fig. 6 of IEC 60 529 (nozzle 12 mm)		N/A
	K) Watertight transformers (IPX7)		N/A
	L) Pressure watertight transformers (IPX8)		N/A
17.2	After moisture test (48 h for \leq IP20, 168 h for other transformers):	48h, 25°C, RH: 93%	P
	– insulation resistance and electric strength (Cl. 18)	See clause 18.2 & 18.3	P

18	INSULATION RESISTANCE AND ELECTRIC STRENGTH		P
18.2	Insulation resistance between:		P
	– live parts and body for basic insulation $\geq 2 \text{ M}\Omega$		N/A
	– live parts and body for reinforced insulation $\geq 7 \text{ M}\Omega$	Primary to enclosure: 100M Ω	P
	– input circuits and output circuits for basic insulation $\geq 2 \text{ M}\Omega$		N/A
	– input circuits and output circuits for double or reinforced insulation $\geq 5 \text{ M}\Omega$	Input to output: 100M Ω	P
	– each input circuit and all other input circuits connected together $\geq 2 \text{ M}\Omega$	Only one input circuit.	N/A
	– each output circuit and all other output circuits connected together $\geq 2 \text{ M}\Omega$	Only one input circuit.	N/A
	– hazardous live parts and metal parts with basic insulation (Class II transformers) $\geq 2 \text{ M}\Omega$	Primary to core: 100M Ω secondary to core: 100M Ω	P
	– body and metal parts with basic insulation (Class II transformers) $\geq 5 \text{ M}\Omega$	Core to enclosure: 100M Ω	P
	– metal foil in contact with inner and outer surfaces of enclosures $\geq 2 \text{ M}\Omega$	Inner to outer enclosure: 100M Ω	P
18.3	Electric strength test (1 min): no flashover or breakdown:		P
	1) basic insulation between input circuits and output circuits; working voltage (V); test voltage (V)		N/A
	2) double or reinforced insulation between input circuits and output circuits; working voltage (V); test voltage (V)	input to output: 4200V	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	3) basic or supplementary insulation between:		P
	a) live parts of different polarity; working voltage (V); test voltage (V)	Between L and N (after fuse open-circuited): 2100V.	P
	b) live parts and the body if intended to be connected to protective earth		N/A
	c) inlet bushings and cord guards and anchorages		N/A
	d) live parts and an intermediate conductive part	Primary to core: 2100V Secondary to core: 2100V	P
	e) intermediate conductive parts and body	Core to output: 2100V	P
	4) Reinforced insulation between the body and live parts; working voltage (V); test voltage (V)	Primary to enclosure: 4200V Secondary to enclosure: 500V	P
18.4	Upri (V): 2 times rated input voltage; no load; frequency (Hz): 2 times rated frequency; duration (min): 5 min	460Vac 100Hz	P
	No breakdown between:		P
	– turns of winding		N/A
	– input and output windings		P
	– adjacent input or output windings		N/A
	– windings and iron core		P
18.5	Touch current and protective earth current	Class II equipment.	P
18.5.1	Touch current		P
	Touch current measured after the clause 14 test (hot) for class I and class II transformers (class II transformers with metal foil at the plastic surface). The test circuit according figure 8. Measuring network according Figure J1 (Annex J). If the frequency is >30kHz, measuring across the 500 Ohm resistor of J1 (burn effects).	The touch current was measured from primary to conductive parts (secondary o/p) and plastic enclosure with metal foil (dimension: 10cm x 20cm).	P
	Measurement of the touch current with switch p of picture 8 in both positions and in combination with switches e and n. The measured values are less than the required values of table 8b.	L, N to output: 0,022mA L, N to enclosure: 0,013mA	P
	– switches n and e in on position		P
	– switch n: off and switch e: on		P
	– switch n: on and switch e: off		P
18.5.2	Protective earth conductor current	Class II equipment	N/A
	The transformer is connected as in clause 14 Impedance of the ammeter < 0,5 Ohm, connected between earth terminal of the transformer and protective earth conductor		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	The measured values are less than the required values of table 8b.		N/A
--	--	--	-----

19	CONSTRUCTION		P
19.1	Input and output circuits electrically separated (IEC 61558-2-6:09)		P
	No possibility of any connection between these circuits (IEC 61558-2-6:09)		P
19.1.1	The insulation between input and output winding(s) consist of double or reinforced insulation (exception see 19.1.3) (IEC 61558-2-6:09)		P
	Class I transformers (IEC 61558-2-6:09)		—
	– Insulation between input windings and body, connected to earth, consist of basic insulation rated to the input voltage (IEC 61558-2-6:09)		N/A
	– Insulation between output windings and body, connected to earth consist of basic insulation rated for the output voltage (IEC 61558-2-6:09)		N/A
	Class I transformers intended for connection to the mains by a plug (EN 61558-2-6:09):		N/A
	- Insulation between input windings and body connected to earth consist of basic insulation rated to the working voltage		N/A
	- Insulation between output windings and body, connected to earth consist of supplementary insulation rated for the working voltage		N/A
	Class II transformers (IEC 61558-2-6:09)		P
	– Insulation between input windings and body consist of double or reinforced insulation to the input voltage (IEC 61558-2-6:09)		P
	– Insulation between output windings and body consist of double or reinforced insulation to the output voltage (IEC 61558-2-6:09)		N/A
19.1.2	Transformers with intermediate conductive parts not connected to the body (between input/output) (IEC 61558-2-6:09):		P
19.1.2.1	Class I and Class II transformers (IEC 61558-2-6:09)		—
	the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage. (IEC 61558-2-6:09)	Primary to core: basic Core to secondary: supplementary	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	<ul style="list-style-type: none"> For class II transformers the insulation between input winding and the body and between the output windings and the body via the intermediate conductive parts consist of double or reinforced insulation. (rated to the input voltage, for SELV circuits only basic insulation to the body) 		N/A
	<ul style="list-style-type: none"> For transformers, different from independent, the insulation between input and output windings, via intermediate conductive parts, consist of double or reinforced insulation, rated to the working voltage. 		P
19.1.2.2	Class I transformers with earthed core, and not allowed for class II equipment (IEC 61558-2-6:09)		N/A
	<ul style="list-style-type: none"> Insulation from the input to the earthed core: basic insulation rated for the input voltage 		N/A
	<ul style="list-style-type: none"> Insulation from the output voltage to the earthed core: basic insulation rated for the output voltage 		N/A
19.1.2.3	Insulation between : input to intermediate conductive parts and output and intermediate parts consist of at least basic insulation (IEC 61558-2-6:09)		P
	<ul style="list-style-type: none"> If the insulation from input or output to the intermediate metal part is less than basic insulation, the part is considered to be connected to input or output. 		N/A
19.1.3	For class I transformers, with protective screen, not connected to the mains by a plug the following conditions comply (IEC 61558-2-6:09):		N/A
	<ul style="list-style-type: none"> The insulation between input winding and protective screen consist of basic insulation (rated input voltage) 		N/A
	<ul style="list-style-type: none"> The insulation between output winding and protective screen consist of basic insulation (rated output voltage) 		N/A
	<ul style="list-style-type: none"> The protective screen consist of metal foil or a wire wound screen extending the full width of the windings and has no gaps or holes 		N/A
	<ul style="list-style-type: none"> Where the protective screen does not cover the entire width of the input winding, additional insulation to ensure double insulation in this area, is used. 		N/A
	<ul style="list-style-type: none"> If the screen is made by a foil, the turns are isolated, overlap at least 3 mm 		N/A
	<ul style="list-style-type: none"> The cross-section of the screen and the lead out wire is at least corresponding to the rated current of the overload device 		N/A
	<ul style="list-style-type: none"> The lead out wire is soldered or fixed to the protective screen. 		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
	Protective screening is not allowed for transformers with plug connection to the mains (IEC 61558-2-6:09)		N/A
19.1.4	No connection between output circuit and protective earth, except of associated transformers (allowed by equipment standard) or 19.8 is fulfilled. (IEC 61558-2-6:09)		N/A
19.1.5	No connection between output circuit and body, except of associated transformers (allowed by equipment standard) (IEC 61558-2-6:09)		N/A
19.1.6	The distance between input and output terminals for the connection of external wiring is ≥ 25 mm		N/A
19.101	Portable transformers having an rated output ≤ 630 VA (IEC 61558-2-6:09)		P
19.102	No connection between input and output circuit, except of associated transformers (allowed by equipment standard) (IEC 61558-2-6:09)		P
19.103	Protective screening is not allowed for transformers with plug connection to the mains (IEC 61558-2-6:09)		N/A
19.2	Fiercely burning material not used		P
	Unimpregnated cotton, silk, paper and fibrous material not used as insulation		P
	Wax-impregnated, etc. not used		P
19.3	Portable transformer: short-circuit proof or fail-safe	Fail-safe	P
19.4	Class II transformers: contact between accessible metal parts and conduits or metal sheaths of supply wiring impossible	Whole enclosed by insulating material.	N/A
19.5	Class II transformers: part of supplementary or reinforced insulation, during reassembly after routine servicing not omitted	Enclosure cannot be opened.	N/A
19.6	Class I and II transformers: creepage distances and clearances over supplementary or reinforced insulation if wire, screw, nut, etc. become loose or fall out of position not $\leq 50\%$ specified values (Cl. 26)	Power cord wires was connected to eyelet terminal by hooking-in soldering; Output cord was connected to eyelet terminal by hooking-in soldering with heat-shrinkable tube as 2 nd fixing; In case of loosen, no reduction of creepage and clearance distance.	P
19.7	Conductive parts connected to accessible metal parts by resistors or capacitors shall be separated from hazardous live parts by double or reinforced insulation		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
19.8	Resistors or capacitors connected between hazardous live parts and the body (accessible metal parts) consist of:		N/A
	– components according to IEC 60 065, 14.1 or capacitor Y1 according to IEC 60 384-14		N/A
	– at least two separate components		N/A
	– if one component is short-circuited or opened, values specified in Cl. 9 shall not be exceeded		N/A
	– if the working voltage is ≤ 250 V, one Y1 capacitor according 60384-14 is allowed		N/A
19.9	Insulation material input/output and supplementary insulation of rubber resistant to ageing		N/A
	Creepage distances (if cracks) \geq specified values (Cl. 26)		N/A
19.10	Protection against accidental contact by insulating coating:		N/A
	a) ageing test (section I, IEC 60 068-2-2), test Ba: 168 h; 70 °C		N/A
	b) impact test (spring-operated impact hammer according to IEC 60 068-2-63; 0,5 ± 0,05 J)		N/A
	c) scratch test (hardened steel pin) electric strength test according to Cl. 18		N/A
19.11	Handles, levers, knobs, etc.:		N/A
	– insulating material		N/A
	– supplementary insulation covering		N/A
	– separated from shafts or fixing by supplementary insulation		N/A
19.12	Windings construction		P
19.12.1	Undue displacement in all types of transformers not allowed:	By two chamber of bobbin plus tape fixing	P
	– of input or output windings or turns thereof		P
	– of internal wiring or wires for external connection		P
	– of parts of windings or of internal wiring in case of rupture or loosening		P
19.12.2	Serrated tape:		N/A
	– distance through insulation according to table 13		N/A
	– one additional layer of serrated tape, and		N/A
	– one additional layer without serration		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– in case of cheekless bobbins the end turns of each layer shall be prevented from being displaced		N/A
19.12.3	Insulated windings wires:		N/A
	– to all types of transformers for basic or supplementary insulation taken separately		N/A
	a) Winding wire with basic or supplementary insulation:		N/A
	– comply with Annex K		N/A
	– the insulation of the conductor: two layers		N/A
	b) Winding wire with double or reinforced insulation:		N/A
	– comply with Annex K		N/A
	– the insulation of the insulated winding wire: three layers		N/A
	– dielectric strength test with the values according 18.3 multiplied by 1,25		N/A
	Where the wire is wound:		N/A
	– upon metal or ferrite cores		N/A
	– upon enamelled wire		N/A
	– under enamelled wire		N/A
	An additional insulation with a dti of supplementary insulation provided between insulated an enamelled wires		N/A
	100 % Routine test according to Annex K.3 for windings giving double or reinforced insulation		N/A
	For windings providing reinforced insulation the values in table 13, table C.1 and table D1, box 2) c), are not required		N/A
19.13	Handles, operating levers and the like shall be fixed		N/A
19.14	Protection against electric shock: covers securely fixed, 2 independent fixing means, one with tool	Top and bottom enclosure fixed by ultrasonic welding	P
19.15	Transformer with pins for fixed socket-outlets: no strain on socket-outlet		N/A
	Additional torque $\leq 0,25$ Nm		N/A
19.16	Protection index for portable transformers:		P
	≤ 200 VA \geq IP20 and instructions for use	IP20	P
	> 200 VA $\leq 2,5$ kVA \geq IPX4 (single-phase)		N/A
	> 200 VA $\leq 6,3$ kVA \geq IPX4 (polyphase)		N/A
	$> 2,5$ VA (single-phase) \geq IP21		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	> 6,3 VA (polyphase) ≥ IP21		N/A
19.17	Transformers IPX1 - IPX6 totally enclosed, except for drain hole (diameter ≥ 5 mm or 20 mm ² with width ≥ 3 mm); drain hole not required for transformer completely filled with insulating materials		N/A
19.18	Transformers ≥ IPX1 with a moulded, if any		N/A
19.19	Class I transformers with a non-detachable flexible cable or cord with earth conductor and a plug with earth contact		N/A
19.20	Live parts of SELV and PELV-circuits: separation not less than PRI/SEC of a safety isolating transformer	No live parts of SELV circuit	N/A
	– SELV output circuits separated by double or reinforced insulation from all other than SELV or PELV circuits		N/A
	– SELV output circuits separated by basic insulation from other SELV or PELV circuits		N/A
19.20.1	SELV circuits and parts not connected to protective earth, to live parts, or protective conductors forming part of other circuits		P
	Nominal voltage (V) > 25 V a.c. or 60 V d.c., the required insulation fulfils the high voltage test according to table 8 a		N/A
19.20.2	PELV-circuits double or reinforced insulation is necessary		N/A
19.21	FELV-circuits: protection against contact fulfils the min. test voltage required for the primary circuit		N/A
19.22	Class II transformers shall not be provided with means for protective earth		P
	For fixed transformers an earth conductor with double or reinforced insulation to accessible metal parts is allowed		N/A
19.23	Class III transformers shall not be provided with means for protective earth		N/A

20	COMPONENTS		P
	Components such as switches, plugs, fuses, lamp holders, flexible cables and cords, comply with relevant IEC standard	(see appended table 20)	P
	Components inside the transformer pass all tests of this standard together with the transformer tests	(see appended table 20)	P
	Testing of components separately to the transformer according the relevant standard:	(see appended table 20)	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– Ratings of the component in line with the transformer ratings, including inrush current. Component test according the component standard, based on the component marking (rating).		P
	– Components without markings tested under transformer conditions including inrush current.		N/A
	– If no IEC standard exist, the component is tested under transformer conditions.		P
20.1	Appliance couplers for main supply shall comply with:		N/A
	– IEC 60 320 for IPX0		N/A
	– IEC 60 309 for other		N/A
20.2	Automatic controls shall comply with IEC 60 730-1		N/A
20.3	Thermal-links comply with IEC 60691	Approved thermal-link(fuse)	P
20.4	Switches shall comply with annex F		N/A
	Disconnection from the supply:		N/A
	– by a switch, disconnecting all poles of the supply (full disconnection under the relevant over-voltage category		N/A
	– or a flexible supply cable and cord with plug		N/A
	– or an instruction sheet: disconnection by all-poles switches incorporated in fixed wiring		N/A
20.5	Socket-outlets of the output circuit shall be such that there is no unsafe compatibility to plugs complying with input circuit.		P
	Plugs and socket-outlets for SELV systems with both a rated current $\leq 3A$ and a rated voltage $\leq 24 V$ shall comply with following:		P
	SELV plug and socket-outlets shall comply with IEC 60 884-2-4 and IEC 60 906-3	Associated transformer	N/A
	– It is not possible for plugs to enter socket-outlets of other standardised voltage system		P
	– Socket outlets do not accommodate plugs of other standardised voltage systems		P
	– Socket outlets do not have a protective earth contact		P
	PELV plug and socket-outlets shall comply with following:		N/A
	– It is not possible for plugs to enter socket-outlets of other standardised voltage system		N/A
	– Socket outlets do not accommodate plugs of other standardised voltage systems		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– Socket outlets do not have a protective earth contact		N/A
	FELV plug and socket-outlets shall comply with following:		N/A
	– It is not possible for plugs to enter socket-outlets of other standardised voltage system		N/A
	– Socket outlets do not accommodate plugs of other standardised voltage systems		N/A
20.6	Thermal cut-outs, overload releases etc. have adequate breaking capacity		P
	– Thermal cut outs fulfil the relevant requirements of 20.7 and 20.8		N/A
	– Thermal links fulfil the relevant requirements of 20.8	See cl. 20.8	P
	– The breaking capacity is in accordance with the relevant fuse standard		P
20.6.1	For Fuses According IEC 60127 and IEC 60269, the fuse current does not exceed 1,1 times of the rated value		N/A
20.7	Thermal cut outs shall meet the requirements of 20.7.1.1 and 20.7.2, or 20.7.1.2 and 20.7.2.		N/A
20.7.1	Requirements according to IEC 60730-1		N/A
20.7.1.1	Thermal cut-out tested as component shall comply with IEC 60 730-1		N/A
20.7.1.2	Thermal cut-out tested as a part of the transformer		N/A
	a) Thermal cut outs type 1 or type 2 (IEC 60730-1)		N/A
	b) Thermal cut outs fulfil the requirements of micro-interruption (type 1C or 2 C) or micro-disconnection, (type 1B or 2B) (see IEC 60730-1)		N/A
	c) Thermal cut outs with manual rest have a trip free mechanism (type 1E and 2E) (see IEC 60730-1)		N/A
	d) The number of cycles of automatic action shall be:		N/A
	– 3000 cycles for self resetting thermal cut-outs		N/A
	– 300 cycles for non self resetting thermal cut-outs resetting by hand		N/A
	– 300 cycles for non self resetting thermal cut-outs resetting disconnecting		N/A
	– 30 cycles for non self resetting thermal cut-outs which are only resettable by a tool		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	e) Thermal cut outs fulfil the electrical stress according IEC 60730-1, 6.14.2		N/A
	f) Characteristic of thermal cut-outs:		N/A
	- ratings according IEC 60730-1, cl. 5		N/A
	- classification according to:		N/A
	1) nature of supply to IEC 60730-1, cl. 6.1		N/A
	2) type of load controlled to IEC 60730-1, cl. 6.2		N/A
	3) degree of protection IPX0 to IEC 60730-1, cl. 6.5.1		N/A
	4) degree of protection IP0X to IEC 60730-1, cl. 6.5.2		N/A
	5) pollution degree to IEC 60730-1, cl. 6.5.3		N/A
	6) comparative tracking index to IEC 60730-1, cl. 6.13		N/A
	7) max. ambient temperature to IEC 60730-1, cl. 6.7		N/A
20.7.1.2	Thermal cut-out tested as a part of the transformer, test with 3 samples:		N/A
	- at least micro-interruption or micro-disconnection (IEC 60730-1)		N/A
	- 300 h aged at t_a (transformer) + 10°C		N/A
	- subjected to a number of cycles for automatic operating according 20.7.1.1		N/A
	During the test no sustaining arcing shall occur, during and after the test no damage at the thermal cut out and the transformer in the sense of this standard		N/A
20.7.2	Thermal cut-outs shall have adequate breaking capacity		N/A
20.7.2.1	The output of the transformer with a non self resetting thermal cut out is short circuited at a supply voltage 1, 1 of rated supply voltage. After opening of the cut off, the supply voltage is switched of, until the transformer is cooling down.		N/A
	- 3 cycles at 25°C for transformers without $t_{a \min}$		N/A
	- 3 cycles at $t_{a \min}$ for transformers with $t_{a \min}$		N/A
	- after the 3 cycles short circuit of the output at 1,1 of rated supply voltage for 48 h.		N/A
	During the tests no sustaining arcing shall occur After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
20.7.2.2	The output of the transformer with a self resetting thermal cut out is short circuited at a supply voltage 1, 1 of rated supply voltage.		N/A
	– 48 h at 25°C for transformers without ta min		N/A
	– 24 h at ta and 24 h at ta min for transformers with ta min		N/A
	During the tests no sustaining arcing shall occur After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.		N/A
20.7.3	Test of a PTC resistor:		--
	5 cycles: transformer short-circuited for 48 h by 1,1 times of the input voltage and max. ta		N/A
	5 cycles: transformer short-circuited for 48 h by 0,9 times of the input voltage and min. ta (if declared)		N/A
	After the test: withstand the test of clause 18, show no damage in sense of this standard, and be operational.		N/A
20.8	Thermal links shall be tested in one of the following two ways.		P
20.8.1	Thermal-links shall comply with IEC 60 691 as a separate component.	Approved thermal-link(fuse), see appended table 20.1	P
	– electrical conditions to IEC 60691, cl. 6.1		P
	– thermal conditions to IEC 60691, cl. 6.2		P
	– ratings to IEC 60691, cl. 8 b		P
	– suitability of sealing components, impregnating fluids or cleaning solvents IEC 60691, cl. 8 c		P
20.8.2	Thermal-links tested as a part of the transformer:		N/A
	– ageing test 300 h by 35 °C or ta + 10 °C		N/A
	– After transformer fault condition the thermal link operate without sustaining arcing		N/A
	– after opening the thermal-link shall have an insulation resistance of at least 0,2 MΩ		N/A
	– 3 cycles for replaceable thermal-links		N/A
	– 3 new specimens for not replaceable thermal-links		N/A
20.9	Self-resetting devices not used if mechanical, electrical, etc. hazards		N/A
20.10	Thermal cut-outs which can be reset by soldering operation are not allowed		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

20.11	Overload protection devices do not operate during test (20 times switched on and off, at no load); Upri (V): 1,1 times rated supply voltage.	Tested at 253V	P
-------	---	----------------	---

21	INTERNAL WIRING		P
21.1	Internal wiring and electrical connections protected or enclosed		P
	Wire-ways smooth and free from sharp edges		P
21.2	Openings in sheet metal: edges rounded (radius $\geq 1,5$ mm) or bushings of insulating material	No openings.	N/A
21.3	Bare conductors: distances adequately maintained		P
21.4	When external wires are connected to terminal, internal wiring shall not work loose		N/A
21.5	Insulation of heat-resistant and non-hygroscopic material for insulated conductors subject to temperature rise > limiting values given in 14.1		N/A

22	SUPPLY CONNECTION AND EXTERNAL FLEXIBLE CABLES AND CORDS		P
22.1	All cables, flexible cords etc. shall have appropriate current and voltage ratings		P
22.2	Input and output wiring inlet and outlet openings for external wiring: separate entries without damage to protective covering of cable or cord	Cord bushing provided for power supply cord and output cord	P
	Input and output wiring inlet and outlet openings for flexible cables or cords: insulating material or bushing of insulating material		P
	Bushings for external wiring: reliably fixed, not of rubber unless part of cord guard		P
22.3	Fixed transformer:		N/A
	– possible to connect after fixing		N/A
	– inside space for wires allow easy introduction and connection of conductors		N/A
	– fitting of cover without damage to conductors		N/A
	– contact between insulation of external supply wires and live parts of different polarity not allowed		N/A
22.4	Length of power supply cord for portable transformers between 2 m and 4 m; without $0,5 \text{ mm}^2$	Measured 204cm (exclude plug and bushing part)	P
22.5	Power supply cords for transformers IPX0 and transformers "for indoor use only" \geq IPX0:		P
	– for transformers with a mass ≤ 3 kg: 60227 IEC52 (H03VV-..) (60245 IEC 53)	820g; H03VVH2-F 2x0,75mm ²	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– for transformers with a mass > 3 kg: 60227 IEC53 (H05VV-..) or 60245 IEC 53		N/A
	Power supply cords for transformers for outdoor use: \geq IPX0: 60245 IEC57 (H05RN-..)		N/A
22.6	Power supply cords for single-phase portable transformers with input current \leq 16A:		N/A
	– cord set fitted with an appliance coupler in accordance with IEC 60320		N/A
22.7	Nominal cross-sectional area (mm ²); input current (A) at rated output not less than shown in table 9	Input cord 0,75mm ² Output cord min. 20AWG	P
22.8	Class I transformer with power supply flexible cable: green/yellow core connected to earth terminal		N/A
	Plug for single-phase transformer with input current at rated output \leq 16 A according to IEC 60 083, IEC 60 906-1 or IEC 60 309	Approved plug used, see appended table 20.1	P
22.9	Type X, Y or Z attachments: see relevant part 2	Type Y attachment for power supply cord; output cord attachment is not classified	P
22.9.1	For type Z attachment: moulding enclosure and power supply cable do not affect insulation of cable		P
22.9.2	Inlet openings or inlet bushing: without risk of damage to protective covering of power supply cord		P
	Insulation between conductor and enclosure:		P
	– for Class I transformer: insulation of conductor plus separate basic insulation		N/A
	– for Class II transformer: insulation of conductor plus double or reinforced insulation	The bushing and the openings are insulating materials	P
22.9.3	Inlet bushings:		P
	– no damage to power supply cord		P
	– reliably fixed		P
	– not removable without tool		P
	– not integral with power supply cord (for type X attachment)		N/A
	– not of natural rubber except for Class I transformer with type X, Y and Z attachments		P
22.9.4	For portable transformers which are moved while operating:		N/A
	– cord guards, if any, of insulating material and fixed		N/A
	Compliance is tested by the oscillating test according to fig. 7:		N/A
	– loaded force during the test according to fig. 7		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– 10 N for a cross-sectional area > 0,75		N/A
	– 5 N for a cross-sectional area ≤ 0,75		N/A
	After the test according to fig. 7:		N/A
	– no short-circuit between the conductors		N/A
	– no breakage of more than 10% of stands of any conductor		N/A
	– no separation of the conductor from the terminal		N/A
	– no loosening of any cord guards		N/A
	– no damage of the cord or cord guard		N/A
	– no broken strands piercing the insulation and not becoming accessible		N/A
22.9.5	Cord anchorages for type X attachment:		N/A
	– glands in portable transformers not used unless possibility for clamping all types and sizes of cable		N/A
	– moulded-on designs, tying the cable into a knot and tying the end with string not allowed		N/A
	– labyrinths, if clearly how, permitted		N/A
	– replacement of cable easily possible		N/A
	– protection against strain and twisting clearly how		N/A
	– suitable for different types of cable unless only one type of cable for transformer		N/A
	– the entire flexible cable or cord with covering can be mounted into the cord anchorage		N/A
	– if tightened or loosened no damage		N/A
	– no contact between cable or cord and accessible or electrically connected clamping screws		N/A
	– cord clamped by metal screw not allowed		N/A
	– one part securely fixed to transformer		N/A
	– for Class I transformer: insulating material or insulated from metal parts		N/A
	– for Class II transformers: insulating material or supplementary insulation from metal parts		N/A
	Cord anchorages for type X, Y, Z attachments: cores of power external flexible cable or cord insulated from accessible metal parts by:		N/A
	– basic insulation (Class I transformers), separate insulating barrier/cord anchorage		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
	– supplementary insulation (Class II transformers), special lining/cable or cord sheath of cable sheath of cable		N/A
	Cord anchorages for type X and Y attachments:		N/A
	– replacement of external flexible cable or cord does not impair compliance with standard		N/A
	– the entire flexible cable or cord with covering can be mounted into the cord anchorage		N/A
	– if tightened or loosened no damage		N/A
	– no contact between cable or cord and accessible or electrically connected clamping screws		N/A
	– cord clamped by metal screws not allowed		N/A
	– knots in cord not used		N/A
	– labyrinths, if clearly how, permitted		N/A
	Tests for type X with special cords, type Y, type Z		P
	Test for type X attachments one test with a cord with smallest and one test with a cord with the largest cross-sectional area:		N/A
	– for the test with clamping screws or tightened with torque 2/3 of that specified in table 11		N/A
	– not possible to push cable into transformer		P
	– 25 pulls of 1 s		P
	– 1 min torque according to table 10		P
	– mass (kg); pull (N); torque (Nm): 820g; 30N pull; 0,1Nm applied on power supply cord		—
	– during test: cable not damaged		P
	– after test: longitudinal displacement ≤ 2 mm for cable or cord and ≤ 1 mm for conductors in terminals	Displacement: 1,5mm on cord	P
	– creepage distances and clearances \geq values specified in Cl. 26		P
22.9.6	Space for external cords or cable for fixed wiring and for type X and Y attachments:		N/A
	– before fitting cover, possibility to check correct connection and position of conductors		N/A
	– cover fitted without damage to supply cords		N/A
	– for portable transformers: contact with accessible metal parts if conductor becomes loose not allowed unless for type X and Y attachments terminations of cords do not slip free of conductor		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Space for external cords or cable for type X attachment and for connection to fixed wiring, in addition:		N/A
	– conductor easily introduced and connected		N/A
	– possibility of access to terminal for external conductor after removal of covers without special purpose tool		N/A

23	TERMINALS FOR EXTERNAL CONDUCTORS		N/A
23.1	Transformer for connection to fixed wiring and transformer without power supply cords with type Y and Z attachments: only connections by screws, nuts, terminals	No terminal for external conductor	N/A
	Terminals are integral part of the transformer:		N/A
	– comply with IEC 60 999-1 under transformer conditions		N/A
	Other terminals:		N/A
	– separately checked according to IEC 60 998-2-1, IEC 60 998-2-2 or IEC 60 947-7-1		N/A
	– used in accordance with their marking		N/A
	– checked according to IEC 60 999-1 under transformer conditions		N/A
	Transformer with type X attachments: soldered connection permitted if reliance not placed upon soldering, crimping or welding alone unless by barriers, creepage distances and clearances between hazardous live parts and metal parts should conductor break away $\geq 50\%$ of specified value (Cl. 26)		N/A
	Transformer with type Y and Z attachments for external conductors: soldered, welded, crimped, etc. connections allowed		N/A
	For Class II transformer: reliance not placed upon soldering, crimping or welding alone unless by barriers, creepage distances and clearances between hazardous live parts and metal parts should conductor break away $\geq 50\%$ of specified value (Cl. 26)		N/A
23.2	Terminals for type X with special cords Y and Z attachments shall be suitable for their purpose:		N/A
	– test by inspection according to 23.1 and 23.2		N/A
	– pull of 5 N to the connection before test according to 14.1		N/A
23.3	Other terminals than Y and Z attachments shall be so fixed that when the clamping means is tightened or loosened:		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– terminal does not work loose		N/A
	– internal wiring is not subjected to stress		N/A
	– creepage distances and clearance are not reduced below the values specified in Cl. 26		N/A
23.4	Other terminals than Y and Z attachments shall be so designed that:		N/A
	– they clamp the conductor between metallic surfaces with sufficient contact pressure		N/A
	– without damage to the conductor		N/A
	– test by inspection according to 23.3 and 23.4		N/A
	– 10 times fastening and loosening a conductor with the largest cross-sectional area with 2/3 of the torque specified in Cl. 25		N/A
23.5	Terminals for fixed wiring and for type X: located near their associated terminals of different polarities and the earth terminal if any		N/A
23.6	Terminal blocks not accessible without the aid of a tool		N/A
23.7	Transformer with type X attachments: stranded conductor test (8 mm removed):		N/A
	– Class I transformers: no connection between live parts and accessible metal parts		N/A
	– free wire of earth terminal: no touching of live parts		N/A
	– Class II transformers: no connection between live parts and accessible metal parts, no connection between live parts and metal parts separated from accessible metal parts by supplementary insulation		N/A
23.8	Terminals for a current > 25 A:		N/A
	– pressure plate, or		N/A
	– two clamping screws		N/A
23.9	When terminal, other than protective earth conductor, screws loosened as far as possible, no contact:		N/A
	– between terminal screws and accessible metal parts		N/A
	– between terminal screws and inaccessible metal parts for Class II transformers		N/A

24	PROVISION FOR PROTECTIVE EARTHING		P
24.1	Class I transformers: accessible conductive parts connected to earth terminal	Class II	N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Class II transformers: no provision for earth		P
24.2	Protective earth terminal for connection to fixed wiring and for type X attachment transformers: comply with Cl. 23, adequately locked, not possible to loosen without a tool		N/A
24.3	No risk of corrosion from contact between metal of earth terminal and other terminal		N/A
	In case of earth terminal body of Al, no risk of corrosion from contact between Cu and Al		N/A
	Body of earth terminal or screws/nuts of brass or other metal resistant to corrosion		N/A
24.4	Resistance of connection between earth terminal and metal parts $\leq 0,1 \Omega$ with a min. 25 A or 1,5 rated input current at 1 min		N/A
24.5	Class I transformers with external flexible cables or cords:		N/A
	– current-carrying conductors becoming touch before the earth conductor		N/A

25	SCREWS AND CONNECTIONS		N/A
25.1	Screwed connections withstand mechanical stresses		N/A
	Screws transmitting contact pressure or likely to be tightened by the user or having a diameter $< 2,8$ mm, shall screw into metal		N/A
	Screws not of metal which is soft or liable to creep (Zn, Al)	Enclosure fixed by ultrasonic welding	N/A
	Screws of insulating material: not used for electrical connection		N/A
	Screws not of insulating material if their replacement by metal screws can impair supplementary or reinforced insulation		N/A
	Screws to be removed (replacement etc. of power supply cord) not of insulating material if their replacement by metal screws can impair basic insulation		N/A
	No damage after torque test: diameter (mm); torque (Nm); ten times		N/A
	No damage after torque test: diameter (mm); torque (Nm); five times		N/A
25.2	Screws in engagement with thread of insulating material:		N/A
	– length of engagement ≥ 3 mm + 1/3 screw diameter or 8 mm		N/A
	– correct introduction into screw hole		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

25.3	Electrical connections: contact pressure not transmitted through insulating material		N/A
25.4	In case of use of thread-forming (sheet metal) screws for connection of current-carrying parts: clamping and locking means provided		N/A
	Thread-cutting (self-tapping) screws used for the connection of current-carrying parts allowed if they generate a full form machine screw thread and if not operated by the user		N/A
	Thread-cutting screws and thread-forming screws used for earth continuity allowed if at least 2 screws for each connection are used and it is not necessary to disturb the connection in normal use		N/A
25.5	Screws for current-carrying mechanical connections locked against loosening		N/A
	Rivets for current-carrying connections subject to torsion locked against loosening		N/A
25.6	Test of screwed glands with a torque according table 12. After the test no damage at the transformer and the gland.		N/A

26	CREEPAGE DISTANCES AND CLEARANCES		P
26.1	Specified values according to:		P
	– table 13, material group IIIa		P
	– table C, material group II		N/A
	– table D, material group I		N/A
	1. Insulation between input and output circuits (basic insulation):		N/A
	a) measured values \geq specified values (mm) .:		N/A
	2. Insulation between input and output circuits (double or reinforced insulation):		P
	a) measured values \geq specified values (mm) .:	Between primary and secondary winding (thru. Bobbin): cr=cl=17,0mm (required: cr \geq 4,6mm; cl \geq 4,3mm based on working voltage 230Vrms)	P
	b) measured values \geq specified values (mm) .:		N/A
	c) measured values \geq specified values (mm) .:	PRI-SEC Dti=1,4mm (required: \geq 1,0mm)	P
	3. Insulation between adjacent input circuits: measured values \geq specified values (mm)		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	Insulation between adjacent output circuits: measured values \geq specified values (mm)		N/A
4.	Insulation between terminals for external connection:		N/A
	a) measured values \geq specified values (mm) ..		N/A
	b) measured values \geq specified values (mm) ..		N/A
	c) measured values \geq specified values (mm) ..		N/A
5.	Basic or supplementary insulation:		P
	a) measured values \geq specified values (mm) ..	Between thermal-fuse lead: cl=cr=10,0mm Between thermal-fuse lead/brown wire terminal to outermost primary winding, thru. Insulating tape: cr=cr=min. 3,1mm (required: cr \geq 2,4mm; cl \geq 2,3mm based on working voltage 230Vrms)	P
	b) measured values \geq specified values (mm) ..		
	c) measured values \geq specified values (mm) ..		
	d) measured values \geq specified values (mm) ..	Between primary winding and core thru. Bobbin: cr=cl=8,5mm From core to secondary winding, thru. bobbin: cr=cl=8,5mm (required: cr \geq 2,4mm; cl \geq 2,3mm based on working voltage 230Vrms)	P
	e) measured values \geq specified values (mm) ..	Enclosure molding gap: cr=4,8mm Core-enclosure: cr=5,7mm (required: cr \geq 2,4mm; cl \geq 2,3mm based on working voltage 230Vrms)	P
6.	Reinforced or double insulation: measured values \geq specified values (mm)	From primary to external enclosure: cl=11,8mm (required: cr \geq 4,6mm; cl \geq 4,3mm based on working voltage 230Vrms)	P
7.	Distance through insulation:		P
	a) measured values \geq specified values (mm) ..		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	b) measured values \geq specified values (mm) .:	PRI to core: 0,8mm SEC to core: 0,6mm (required: $dti \geq 0,5mm$)	P
	c) measured values \geq specified values (mm) .:	Enclosure: 2,5mm (required: $\geq 1,0mm$)	P
	Creepage distances and clearances are measured:		N/A
	– for fixed wiring and type X attachments with max. and min. size		N/A
	– for type X with a special cord, Y or Z attachments with the supply cable as delivered		N/A
	– for layers of serrated tapes the values are so determined as if the serration coincided through the different layers		N/A
	– for printed wiring shall be used the unreduced values for live parts as in table 13, C.1 or D.1, except if printed wiring complies with IEC 60 664-3		N/A
	If the pollution generates high and persistent conductivity caused:		N/A
	– clearances of P3 increased with min. 1,6 mm		N/A
	– value X in Annex A increased with 4,0 mm		N/A
26.2	Creepage distances (cr) and clearances (cr)		N/A
26.2.1	Windings covered with adhesive tape		N/A
	– the values of pollution degree 1 are fulfilled		N/A
	– all isolating material are classified acc. to IEC 60085 and IEC 60216		N/A
	– test A of 26.2.3 is fulfilled		N/A
26.2.2	Uncemented insulating parts pollution degree P2 or P3		N/A
	– all isolating material are classified acc. to IEC 60085 and IEC 60216		N/A
	– values of pollution degree 1 are not applicable		N/A
26.2.3	Cemented insulating parts		N/A
	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	– values of distance through insulation (dti) are fulfilled		N/A
	– creepage distances and clearances are not required		N/A
	– test A of this sub clause is fulfilled		N/A
	Test A		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– thermal class		N/A
	– working voltage		N/A
	– Test with three specially specimens, with unin-sinuated wires, without impregnation or potting		N/A
	Two of the three specimens are subjected to:		N/A
	- the relevant humidity treatment according to 17.2 (48 h)		N/A
	- the relevant dielectric strength test of 18.3 multiplied with factor 1,35		N/A
	- One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature		N/A
	Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 μ s waveform) – see Annex R of IEC 61558-1		N/A
26.2.4	Enclosed parts, by impregnation or potting		N/A
26.2.4.1	– The requirements of reduced values as stated for pollution degree 1 (P1) are fulfilled		N/A
	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	Test B		N/A
	– thermal class		N/A
	– working voltage		N/A
	– Test with three specially specimens, potted or impregnated. The dielectric strength test is applied directly to the joint.		N/A
	Two of the three specimens are subjected to:		N/A
	– the relevant humidity treatment according to 17.2 (48 h)		N/A
	– the relevant dielectric strength test of 18.3 multiplied with factor 1,25		N/A
	– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,25 immediately at the end of the last cycle with high temperature		N/A
	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 μ s waveform) – see Annex R of IEC 61558-1		N/A
26.2.4.2	– The requirements of distance through insulation (dti) are fulfilled. (P1 values are not required)		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– all isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	Test C		N/A
	– thermal class		N/A
	– working voltage		N/A
	– Test with three specimens, potted or impregnated. (finished components)		N/A
	– Neither cracks, nor voids in the insulating compounds		N/A
	Two of the three specimens are subjected to:		N/A
	– the relevant humidity treatment according to 17.2 (48 h)		N/A
	– the relevant dielectric strength test of 18.3 multiplied with factor 1,35		N/A
	– One of the three specimens is subjected to the relevant dielectric strength test of 18.3 multiplied by the factor 1,35 immediately at the end of the last cycle with high temperature		N/A
	The three spacemen pass the Impulse dielectric test according to 4.1.1.2.1 of IEC 60 664-1 (1,2 / 50 μ s waveform) – see Annex R of IEC 61558-1		N/A
26.3	Distance through insulation		P
	For double or reinforced insulation, the required values of Tables 13, C1, and D1 – boxes 2b, 2c and 7 are fulfilled		P
	The insulation fulfil the material classification according IEC 60085 or 60216 or the test of 14.3		P
26.3.1	Reduced values of the thickness of insulation for supplementary or reinforced insulation are allowed if the following conditions are fulfilled:		N/A
	– the isolating materials are classified acc. to IEC 60085 and IEC 60216		N/A
	– the test of 14.3 is fulfilled		N/A
	– If both requirements are fulfilled, the required values for solid insulation can be multiplied by 0,4		N/A
	– Minimum thickness of reinforced insulation $\geq 0,2$ mm		N/A
	– Minimum thickness of supplementary insulation $\geq 0,1$ mm		N/A
26.3.2	Insulation in thin sheet form		N/A
	– If the layers are non separable (glued together):		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	- The requirement of 3 layers is fulfilled		N/A
	- The mandrel test according 26.3.3 is fulfilled with 150 N		N/A
	- The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index “e” are fulfilled.		N/A
	- If the layers are separated:		N/A
	- The requirement of 2 layers is fulfilled		N/A
	- If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required		N/A
	- The mandrel test according 26.3.3 is fulfilled on each layer with 50 N		N/A
	- The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index “e” are fulfilled.		N/A
	- If the layers are separated (alternative:		N/A
	- The requirement of 3 layers is fulfilled		N/A
	- If serrated tape is used, 1 additional layer (serrated) and one additional layer without serration is required		N/A
	- The mandrel test according 26.3.3 is fulfilled on 2/3 of the layers with 100 N		N/A
	- The required values for d.t.i. of Tables 13, C.1 and D.1 – marked by index “e” are fulfilled.		N/A
	Test according to 14.3 and if the isolating materials are classified acc. to IEC 60085 and IEC 60216 no distances through insulation are required for insulation in thin sheet form		N/A
	The figures within square brackets in box 2 and 7 of table 13 (C.1/D.1) are used for insulation in thin sheet form as follows:		N/A
	- rated output > 100 VA values in square brackets apply		N/A
	- rated output $\geq 25 \text{ VA} \leq 100 \text{ VA}$ 2/3 of the value in square brackets apply		N/A
	- rated output $\leq 25 \text{ VA}$ 1/3 of the value in square brackets apply		N/A
26.3.3	Mandrel test of insulation in thin sheet form (specimen Of 70 mm width are necessary):		N/A
	- If the layers are non separable – at least 3 layers glued together fulfil the test:		N/A
	- pull force of 150 N		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	- high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown.		N/A
	- If the layers are separable and 2/3 of at least 3 layers fulfil the test.		N/A
	- pull force of 100 N		N/A
	- high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdowns.		N/A
	- If the layers are separable 1 of at least 2 layers fulfil the test:		N/A
	- pull force of 50 N		N/A
	- high voltage test of 5,0 kV or the test voltage of 18.3 multiplied by 1,25 whatever is the greater. No flashover, no breakdown.		N/A
26.101	The values for creepage distances clearances and distances through insulation for voltages above 1000 V are found by extrapolation.		N/A

27	RESISTANCE TO HEAT, FIRE AND TRACKING		P
27.1	Resistance to heat		P
	All insulating parts are resistant to heat		P
	For parts of rubber, which passed the test of 19.9, no additional test is required.		N/A
	The tests are not required for cables and small connectors with a rated current ≤ 3 A, a rated voltage ≤ 24 V a.c. or 60 V d.c. and a power ≤ 72 W		P
27.1.1	External accessible parts		P
	The Ball-pressure test -: diameter of impression ≤ 2 mm; heating cabinet temperature ($^{\circ}\text{C}$) at 70°C or the temperature T of 14.1 (T + 15) - is fulfilled.	Enclosure: 85°C ; $\varnothing=1,8\text{mm}$	P
27.1.2	Internal parts		P
	For insulating material retaining current carrying parts in position, the ball-pressure test -: diameter of impression ≤ 2 mm; heating cabinet temperature ($^{\circ}\text{C}$) at 125°C or the temperature T of 14.1 (T + 15) - is fulfilled	Transformer Bobbin: 125°C ; $\varnothing=1,7\text{mm}$	P
27.2	Resistance to abnormal heat under fault conditions	Fail-safe transformer	N/A
	Insulating material of transformers \geq IP20: no source of ignition for surroundings in case of abnormal heat or fire. Hazardous live parts shall not be accessible.		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict
	Two special prepared specimens for the test in which short-circuit windings are built-in		N/A
27.2.1	Portable transformers are placed on a dull painted plywood support, as described in 14.1		N/A
	Stationary transformers fixed in the most unfavourable position on a dull painted support:		N/A
	– if this position for use is vertical or ceiling transformer and support 200 mm above a pinewood board with tissue paper		N/A
	Self-resettable devices are short-circuit		N/A
	Input circuits protected with 10 times rated current, min. 16 A (fuse)		N/A
	Test time for protective devices of the transformer without load:		N/A
	– max. 15 days, or		N/A
	– definitive interruption in the input circuit		N/A
	If non-self-resettable or replaceable protective devices are used the following cycle test is necessary:		N/A
	– non-self-resettable: 30 cycles with no load until interruption and 2 h cool down		N/A
	– replaceable protective device: 10 cycles with no load until interruption and 2 h cool down		N/A
	During the tests:		N/A
	– no flames occur		N/A
	– support temperature shall not exceed 125°C		N/A
	– no ignition of the tissue paper		N/A
27.2.2	After the tests:		N/A
	a) transformer with definitive interruption in the input circuit withstands the test with 35% of the values according to table 8a		N/A
	b) transformer with no definitive interruption withstands the test voltage (100%) according to table 8a of Cl. 18: hazardous live parts are not touchable by the stranded test finger		N/A
27.3	Resistance to fire		P
	All isolating parts of the transformer shall be resistant to ignition and spread of fire. The test according to IEC 60696-2-10 is required		P
27.3.1	External accessible parts (glow wire tests)		P
	– 650°C for enclosures	Enclosure	P
	– 650 °C for parts retaining current carrying parts in position and terminals for external conductors Current $\leq 0,2$ A		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	– 750°C for parts retaining current carrying parts in position and terminals for external conductors with fixed wiring. Current > 0,2 A		N/A
	– 850°C for parts retaining current carrying parts in position and terminals for external conductors with non fixed wiring. Current > 0,2 A		N/A
27.3.2	Internal parts		P
	– 550°C for internal insulating material – not retaining current carrying parts in position		N/A
	– 650°C for coil formers (bobbins)		N/A
	– 650 °C for parts retaining current carrying parts in position and terminals for external conductors . Current ≤ 0,2 A		N/A
	– 750°C for parts retaining current carrying parts in position and terminals for external conductors with fixed wiring. Current > 0,2 A	Transformer bobbin	P
	– 850°C for parts retaining current carrying parts in position and terminals for external conductors with non fixed wiring. Current > 0,2 A		N/A
27.4	For IP other than IPX0:If insulating parts retaining current carrying parts in position and under P3 conditions, the material resistance to tracking is at least material of group IIIa	IPX0	N/A
	Test (175 V): no flashover or breakdown before 50 drops		N/A

28	RESISTANCE TO RUSTING		P
	Ferrous parts protected against rusting	Varnished transformer core	P

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

E	ANNEX E , GLOW WIRE TEST		P
	The test is required according to IEC 60695-2-10 and IEC 60695-2-11 with the following additions:		P
E 1	Clause 6, "Severities" of IEC 6095-2-11, apply with the temperature stated in 27.3 of IEC 61558-1		P
E 2	Clause 8, "Conditioning", of IEC 60695-2-11 apply, preconditioning is required		P
E 3	Clause 10, "Test Procedure", of IEC 60695-2-11 apply, The tip of the glow wire is applied to the flat side of the surface.		P

F	ANNEX F, REQUIREMENTS FOR MANUALLY OPERATED SWITCHES WHICH ARE PARTS OF THE TRANSFORMER		N/A
F 2	Manually operated mechanical switches, tested as separate component, shall comply with IEC 61058 under the conditions of F2.		N/A
F 3	Manually operated mechanical switches tested as part of the transformer shall comply with the conditions specified under F.3		N/A

H	ANNEX H, ELECTRONIC CIRCUITS (IEC 61558-1)		N/A
H 1	General notes on tests (addition to clause 5)		N/A
H 2	SHORT-CIRCUIT AND OVERLOAD PROTECTION (ADDITION TO CLAUSE 15)		N/A
H 2.1	Circuits designed and applied so that fault conditions do not render the appliance unsafe		N/A
	During and after each test:		N/A
	– temperatures do not exceed values specified in table 3 of Cl. 15.1		N/A
	– transformer complies with conditions specified in sub-clause 15.1		N/A
	If a conductor of a pcb becomes open circuited, the transformer is considered to have withstood the particular test, provided that all six conditions as specified are met		N/A
H 2.2	Fault conditions a) to f) of sub-clause H.2.3 are not tested if the following conditions are met:		N/A
	– electronic circuit is a low-power circuit as specified		N/A
	– safety of the appliance as specified does not rely on correct functioning of the electronic circuit		N/A
H 2.3	Fault conditions tested as specified when relevant:		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	a) short-circuit of creepage distances and clearances, if less than specified in Cl. 26		N/A
	b) open circuit at the terminals of any component		N/A
	c) short-circuit of capacitors, unless they comply with IEC 60 384-14		N/A
	d) short-circuit of any two terminals of an electronic component as specified		N/A
	e) any failure of an integrated circuit as specified		N/A
	f) low-power circuit: low-power points are connected to the supply source		N/A
	Cl. 15 is repeated with a simulated fault as indicated in a) to e), if the transformer incorporates an electronic circuit to ensure compliance with Cl. 15		N/A
	Fault condition e) is applied for encapsulated and similar components		N/A
	PTC's and NTC's are not short-circuited if they are used as specified		N/A
H 2.4	If for a fuse-link complying with IEC 60 127-3 rated fuse current I1 is used, current I2 is measured as specified:		N/A
	– if $I2 < 2,1 \times I1$ test of 15.8 is repeated with fuse-link short-circuited		N/A
	– if $I2 > 2,75 \times I1$, no other tests are necessary		N/A
	If $I2 > 2,1 \times I1$ and $I2 < 2,75 \times I1$ test of 15.8 is repeated as specified		N/A
	For fuses other than those complying with IEC 60 127-3, the test is carried out as specified 15.3.2 to 15.3.5		N/A

H 3	CREEPAGE DISTANCES, CLEARANCES AND DISTANCES THROUGH INSULATION		N/A
H 3.1	For live parts separated by basic insulation smaller cr and cl as in 26 are allowed, if H2 is fulfilled.		N/A
	In optocouplers no requirements of cr and cl		N/A
	For coatings annex W applies. Smaller distances as required in IEC 60664-3, clause 4 are applicable,		N/A
	For potted transformers cycling tests acc, 26.2. are applicable		N/A
H 3.2	The ma. surface temperature of optocouplers is 50 K		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

K	ANNEX K, INSULATED WINDING WIRES FOR USE AS MULTIPLE LAYER INSULATION		N/A
K.1	Wire construction:	No insulated winding wire used.	N/A
	– insulated winding wire with min. two layers for basic or supplementary insulation		N/A
	– insulated winding wire with min. three layers for reinforced insulation		N/A
	– winding insulation material		N/A
K.2	Conformance test		N/A
K.2.1	Test 13 of IEC 60 851-5 nominal conductor diameter $\geq 0,018 \text{ mm} \leq 0,1 \text{ mm}$, test as specified in 4.2.1 and 4.2.2 of IEC 60 851-5		N/A
	Nominal conductor diameter $> 0,1 \text{ mm}$, $\square 2,5 \text{ mm}$, test as specified in 4.3.1 and 4.3.2 of IEC 60 851-5		N/A
	Nominal conductor diameter $< 2,5 \text{ mm}$, test as specified in 4.4.1 and 4.4.2 of IEC 60 851-5		N/A
	High voltage test immediately after the above specified tests:		N/A
	– test voltage for two layers 3 kV		N/A
	– test voltage for three layers 5,5 kV		N/A
K.2.2	Adherence and flexibility, test as specified under 5.1.4 of IEC 60 851-3		N/A
	– high voltage test immediately after this test		N/A
	– test voltage for two layers 3 kV		N/A
	– test voltage for three layers 5,5 kV		N/A
K.2.3	Heat shock, test as specified under 3.1 or 3.2 of IEC 60 851-6:		N/A
	– high voltage test immediately after this test		N/A
	– test voltage for two layers 3 kV		N/A
	– test voltage for three layers 5,5 kV		N/A
K.2.4	Retention of dielectric strength after bending, test as specified under test 13 of 4.6.1 c) of IEC 60 851-5		N/A
	1. high voltage test immediately after this test		N/A
	2. test voltage for two layers 3 kV		N/A
	3. test voltage for three layers 5,5 kV		N/A

U	ANNEX U – INFORMATIVE – OPTIONAL TW – MARKING FOR TRANSFORMERS	N/A
----------	---	-----


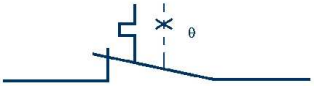


IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	The tests of Annex U are based on constant S = 4500. Other constants are possible, if the test of U.5.2 is done with positive result.		N/A
U1	General notes and tests		N/A
	8 transformers of one type are necessary for the test. Tests according U5.		N/A
U.2	Heating (addition to clause 14)		N/A
14.4	Thermal endurance test		N/A
	Test according U5 and measurements according 11.1		N/A
	Transformers tested as a integral part of the equipment (option), assigned with tw		N/A
	The thermal conditions are so adjusted, that the duration of test is as indicated by the manufacturer.		N/A
	If no indications are given, the test period is 30 days		N/A
	After the test, when the transformers have returned to room temperature, they fulfil the following requirements:		N/A
	a) The output voltage has not changed from the measured value at the beginning by more than allowed value of clause 11.1		N/A
	b) The insulation resistance between input and output winding and between windings and body is, measured with 500 V d.c. , not less than 1 MOhm		N/A
	c) The transformer fulfil the dielectric strength test with 35% of the values in Clause 18, Table 8.a.		N/A
	The test result is positive, is min. 6 of the 7 samples have passed the test.		N/A
	The test result is negative, if 2 or more samples fail the test		N/A
	If the result is negative, the test can be repeated with 7 new samples		N/A
U.3	Short circuit and overload protection (addition to clause 15)		N/A
	At short circuit and overload tests the winding temperature if less than the required value of table U.1		N/A
U.5	General requirements and information about thermal endurance test on windings		N/A
U.5.1	Thermal endurance test		N/A
	Transformers tested at rated output		N/A
	Loads outside of the oven		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

	7 transformers are placed in the oven		N/A
	The temperature of the hottest winding of each of the 7 transformers is-together with the oven temperature, at the applicable temperature of table U.2		N/A
	After 4 hours measuring of the actual winding temperatures. Regulation of the oven temperature if necessary		N/A
	After 24 hours again measuring of the winding temperature. The temperatures of the 7 samples are very near to the required temperature of the values of table U.2. The test time of the coldest winding is not longer than twice the theoretical test time based on table U.2		N/A
U.5.2	The use of constant S other than 4500 in tw tests		--
U.5.2.1	Procedure a)		N/A
	The manufacturer prepares test results with a minimum of samples of 30.		N/A
	T and log L are calculated from the dates		N/A
	The diagram according to Figure U.2 will be founded.		N/A
U.5.2.3	Procedure b)		N/A
	The testing authority shall test 14 new transformers		N/A
	Test 1, based on clause U.5.1 but at the calculated test room temperature for 10 days. The test is continued until all transformer fail.		N/A
	Calculation of the mean life L ₂ at temperature T ₂ according to U4		N/A
	Test 2, based on clause U.5.1 but at a calculated room temperature T ₂ (for 120 days).The test time with T ₂ exceeds L ₂ .		N/A
	If all transformers fail before L ₂ , the result is negative.		N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

V	ANNEX V, SYMBOLS TO BE USED FOR THERMAL CUT-OUTS	P
V.2.1.1	Restored by manual operation  IEC 489/98	N/A
V.2.1.2	Restored by disconnection of the supply  IEC 490/98	N/A
V.2.1.3	Thermal link  IEC 491/98	See copy of marking plate
V.2.2	Self-resetting thermal cut-out  IEC 492/98	N/A

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

11 and 12		TABLE: OUTPUT VOLTAGE AND OUTPUT CURRENT UNDER LOAD; NO-LOAD OUTPUT VOLTAGE				P
Clause		11		12		further information (Required % for cl. 11 and 12 respectively)
type/rated output/	rated voltage (V)	Measured under load output voltage (V)	Difference between rated and under load voltage (%)	No load output (V)	Difference between rated and no- load voltage (%)	
WT57- 2401000AE / 24VA	24Vac	23,65Vac	-1,46	25,96Vac	9,77	±5%; 50%

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

14.1	TABLE: HEATING				P
T1 (°C):	22,8			—	
T2 (°C):	21,9			—	
Duration:	Until steady			—	
Test voltage (V):	253V			—	
Temperature T of part/at:	T(°C)			Required T(°C)	
Power cord (separation point)	50,4			70	
Transformer Primary winding (as bobbin)	76,0			110	
Transformer secondary winding (as bobbin)	77,0			110	
Transformer core (as internal enclosure)	69,3			See cl. 27	
Output cord (inside, hottest)	52,6			70	
External enclosure (top-hottest)	47,9			80	
External enclosure (side-hottest)	40,4			80	
Support	30,5			85	
Winding temperature measurements:					
Temperature of winding:	R ₁ (Ω)	R ₂ (Ω)	T (°C)	Required T (°C)	Insulation class
Transformer Primary winding	70,0	84,9	77,4	120	B
Transformer secondary winding	2,100	2,544	77,2	120	B
Test condition: output loaded in rated impedance					

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

15.5	TABLE: Overload temperature measurements			P	
	Test voltage (V):	253V		--	
	Rated output current (mA):	1000		--	
	1,5 time of rated output current (mA):	1500		--	
	t1 (°C) :	22,2	23,5	22,2	--
	t2 (°C) :	21,8	22,5	21,8	--
	Duration for 1,5 times rated output current for steady (max. 5h):	4,5hr	4,5hr	4,5hr	--
	Thermal fuse operate duration after short-circuit the secondary winding	29sec	30sec	31sec	--
Temperature of part/at:		T(°C)			Required (°C)
External Enclosure (top)		65,4	51,8	61,8	175
External Enclosure (side)		82,7	79,2	83,0	175
Supports		72,5	74,7	70,1	125

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

20.1	TABLE: list of critical components					P
Object / part No.	Manufacturer / trademark	Type / model	Technical data	Standard	Mark(s) of conformity ¹⁾	
AC plug	Kenic Electric Mfg. Co. Ltd.	KE-21	AC 250V 2,5A	EN50075	VDE (no. 097182)	
Power cord	Kenic Electric Mfg. Co. Ltd.	H03VVH2-F	2x0,75mm ² 204cm long (min.)	DIN VDE 0281-5 IEC 227	VDE (no. 103853)	
Enclosure (top & bottom)	SABIC INNOVATIVE PLASTICS JAPAN L L C	241R(f2)	PC V-2 125°C for min. thickness 1,5mm CTI=2	EN/IEC 61558-2-6 UL94	Tested in appliance, UL E45587	
(Alternative) Thermal-link	Aupo Electronics Ltd.	P4-1A-F	AC 250V 1A Tf=130°C	EN 60669	VDE (no. 40002523)	
Transformer bobbin	E I DUPONT DE NEMOURS & CO INC	101L	PA66 V-2 130°C CTI=0	EN/IEC 61558-2-6 UL94	Tested in appliance, UL E41938	
Transformer	Alltronics Manufacturing Co.	WT57-2401000AE	EI-57x31mm class B PRI: 1200Ts Ø=0,21mm SEC: 138Ts Ø=0,6mm	EN/IEC 61558-2-6	Tested in appliance	
Magnet wire	TAI-I ELECTRIC WIRE & CABLE CO LTD	UEW/UEWB	Polyurethane 130°C	EN/IEC 61558-2-6 UL1446	Tested in appliance, UL E85640	
(Alternative) Magnet wire	TA YA ELECTRIC WIRE & CABLE CO LTD	TYPYU-130	Polyurethane 130°C	EN/IEC 61558-2-6 UL1446	Tested in appliance, UL E84201	
(Alternative) Magnet wire	SHENZHEN DAYANG INDUSTRY CO LTD	Yuew or QA	Polyurethane 130°C	EN/IEC 61558-2-6 UL1446	Tested in appliance, UL E176101	

¹⁾ an asterisk indicates a mark which assures the agreed level of surveillance

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

20.1 (2)	TABLE: list of Other Components			P
Object/part no.	Type/model	Technical data	Compliance to	
Output cord	--	PVC Min. 20AWG	--	
Insulating tape	PZ	Polyethylene terephthalate 130°C	UL510; UL E165111	
(Alternative) Insulating tape	1P801	Polyethylene terephthalate 130°C	UL510; UL E126174	
(Alternative) Insulating tape	--	Polyethylene terephthalate 130°C	UL	
Heat-shrinkable tube (cover output cord terminals)	HFT-2	125°C 600V VW-1	UL224; UL E236485	
(Alternative) Heat-shrinkable tube (cover output cord terminals)	--	125°C 600V VW-1	UL	

26.2 TEST A	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION					N/A
	Test with three special prepared specimens with uninsulated wires, without potting or impregnation					
	cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

26.2 TEST B	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION					N/A
	Test with three specially prepared specimens with potting or impregnation (P1)					
	cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

26.2 TEST C	TABLE: CREEPAGE DISTANCES AND CLEARANCES AND DISTANCES THROUGH INSULATION					N/A
	Test with three specially prepared specimens with potting (only dti is required)					
	cycles with 2 x working voltage between pri / sec	68 h at the temperature acc. Cl. 14 (min. 85 °C)	1 hour 25 °C	2 hour 0 °C	1 hour 25 °C	
1.						
2.						
3.						
4.						
5.						
6.						
7.						
8.						
9.						
10.						

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

Annex U	U.5.1 THERMAL ENDURANCE TEST														N/A
Type ref.															
Rated PRI-Voltage															
Rated SEC-Voltage															
Material of Winding															
Material of bobbin															
Material of resin															
Material of potting															
Material of foil															
Components re- moved for test															
tw															
S															
Objective test dura- tion (days)															
Theoretical test temperature															
Sample	1		2		3		4		5		6		7		
Winding	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	
Start – Rk															
After 4 h – Rw															
After 4 h – winding temperature															
After 4 h - oven temperature															
After 24 h – Rw															
After 24 h – wind- ing temperature															
After 24 h - oven temperature															
Final test period (days)															
Output voltage (11.1) under load															
Insulating re- sistance															
High voltage test (35% of the values in Table 8.a															

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

Annex U	U.5.2 The use of an other constant S other than 4500 in tw tests														N/A
	Test1: 10 days														
Type ref.															
Rated PRI-Voltage															
Rated SEC-Voltage															
Material of Winding															
Material of bobbin															
Material of resin															
Material of potting															
Material of foil															
Components re- moved for test															
tw															
S															
Objective test dura- tion (days)															
Theoretical test temperature															
Sample	1		2		3		4		5		6		7		
Winding	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	
Start – Rk															
After 4 h – Rw															
After 4 h – winding temperature															
After 4 h - oven temperature															
After 24 h – Rw															
After 24 h – wind- ing temperature															
After 24 h - oven temperature															
Final test period (days)															
Output voltage (11.1) under load															
Insulating re- sistance															
High voltage test (35% of the values in Table 8.a															

IEC 61558-2-6			
Clause	Requirement + Test	Result - Remark	Verdict

Annex U	U.5.2 The use of an other constant S other than 4500 in tw tests														N/A		
	Test2: 120 days																
Type ref.																	
Rated PRI-Voltage																	
Rated SEC-Voltage																	
Material of Winding																	
Material of bobbin																	
Material of resin																	
Material of potting																	
Material of foil																	
Components re- moved for test																	
tw																	
S																	
Objective test dura- tion (days)																	
Theoretical test temperature																	
Sample	1		2		3		4		5		6		7				
Winding	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	PRI	SEC	
Start – Rk																	
After 4 h – Rw																	
After 4 h – winding temperature																	
After 4 h - oven temperature																	
After 24 h – Rw																	
After 24 h – wind- ing temperature																	
After 24 h - oven temperature																	
Final test period (days)																	
Output voltage (11.1) under load																	
Insulating re- sistance																	
High voltage test (35% of the values in Table 8.a																	

APPENDIX	Information according to CB Bulletin for IEC 61558-2-6(ed.2) The following countries have neither EU nor National Group Differences: Germany	--
----------	---	----

APPENDIX	Information according to CB Bulletin for IEC 61558-1(ed.2); am1 The following countries have neither EU nor National Group Differences: Germany	--
----------	--	----