Produkte
Products

Prüfbericht - Nr.: *Test Report No.:*	**15032236 001**		**Seite 1 von 14** *Page 1 of 14*
Auftraggeber: *Client:*	**Zhejiang Tianqi Electric Co., Ltd.** *Tianzi Lake Industrial Zone, Gaoyu, Anji, Huzhou, Zhejiang 313310, P.R. China*		
Gegenstand der Prüfung: *Test item:*	**Polyester Enclosure**		
Bezeichnung: *Identification:*	**TIP/TX**	**Serien-Nr.:** *Serial No.:*	**Engineering samples**
Wareneingangs-Nr.: *Receipt No.:*	**153120545**	**Eingangsdatum:** *Date of receipt:*	**11.05.2009**
Prüfort: *Testing location:*	**TÜV Rheinland (Shanghai) Co., Ltd.** *10-15/F, Huatsing Building, No.88, Lane 777, Guangzhong Road West 200072 Shanghai Zhabei District CHINA*		
Prüfgrundlage: *Test specification:*	**EN 62208:2003 clause 9.7**		
Prüfergebnis: *Test Result:*	**Der Prüfgegenstand entspricht oben genannter Prüfgrundlage(n).** *The test item passed the test specification(s).*		
Prüflaboratorium: *Testing Laboratory:*	**TÜV Rheinland (Shanghai) Co., Ltd.**		

geprüft/ *tested by:* | **kontrolliert/** *reviewed by:*

Datum / Date	Name/Stellung / Name/Position	Unterschrift / Signature	Datum / Date	Name/Stellung / Name/Position	Unterschrift / Signature
18.06.2009	Yi Zeng/PE	Yi Zeng	18.06.2009	Xia Bo/Reviewer	

Sonstiges/ *Other Aspects:*

Attachment 1: measurement and test equipment list (1 page).

Abkürzungen:				*Abbreviations:*			
	P(ass)	=	*entspricht Prüfgrundlage*		*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*

TEST REPORT
IEC / EN 62208
Empty enclosures for low voltage switchgear and controlgear assemblies – General requirements

Report Reference No. ..... :	15032236 001	
Tested by (name + signature) ..... :	see cover page	.....
Witnessed by (name + signature) ..... :	--	.....
Supervised by (name + signature) .... :	see cover page	.....
Approved by (name + signature) ..... :	see cover page	.....
Date of issue ..... :	see cover page	
Testing Laboratory ..... :	**TÜV Rheinland (Shanghai) Co., Ltd.**	
Address ..... :	*10-15/F, Huatsing Building, No.88, Lane 777, Guangzhong Road West, 200072 Shanghai Zhabei District CHINA*	
Testing location/ procedure ..... :	**TÜV Rheinland (Shanghai) Co., Ltd.**	
Testing location/ address ..... :	*10-15/F, Huatsing Building, No.88, Lane 777, Guangzhong Road West, 200072 Shanghai Zhabei District CHINA*	
Applicant's name ..... :	**Zhejiang Tianqi Electric Co., Ltd.**	
Address ..... :	*Tianzi Lake Industrial Zone, Gaoyu, Anji, Huzhou, Zhejiang 313310, P.R. China*	
Test specification:		
Standard ..... :	~~IEC 62208:2002 (Edition 1.0)~~ / EN 62208:2003	
Test procedure ..... :	~~CB /~~ CCA	
Non-standard test method ..... :	N/A	
Test Report Form No. ..... :	IECEN62208A	
TRF Originator ..... :	OVE	
Master TRF ..... :	Dated 2004-07	

Test item description ..... :	**Polyester Enclosure**
Trade Mark ..... :	TIBOX
Manufacturer ..... :	Zhejiang Tianqi Electric Co., Ltd.
Model/Type reference ..... :	TIP/TX
Ratings ..... :	IP65

Copy of marking plate:

TIBOX

TIP/TX

Summary of testing:

Only Clause 9.7 was tested based on the requirement of client.

Test item particulars (Classification):	
Type of material ..... :	insulating ~~/ metallic / combination of insulating and metallic~~
Method of fixing..... :	~~floor standing~~ / wall mounting ~~/ flush mounting / pole mounting~~
Intended location..... :	outdoor ~~/ indoor~~
Degree of protection ..... :	IP 65 ~~/ IK~~
Rated insulation voltage (if applicable)..... :	N/A
Possible test case verdicts:	
- test case does not apply to the test object ..... :	N/A
- test object does meet the requirement..... :	P(Pass)
- test object does not meet the requirement..... :	F(Fail)
Testing ..... :	
Date of receipt of test item..... :	11.05.2009
Date (s) of performance of tests..... :	02.06.2009 – 04.06.2009

General remarks:

This report is not valid as a Test Report according to a Mutual Recognition Agreement (i.e. IECEE-CB, CCA) unless signed by an approved Testing Laboratory and appended to a corresponding Certificate issued by a National Certification Body, signatory to the relevant Scheme.

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 is used as the decimal separator.

General product information:

The Polyester Enclosure is made by SMC and dimension is 400X300X200.

The manufacturer of material SMC is Yueqing Resin Factory of Zhejiang.

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
6	**INFORMATION TO BE GIVEN REGARDING THE ENCLOSURE**		
6.1	Marking		
	The enclosure shall be marked as follows:		
	- Name, trade mark or identification mark of the enclosure manufacturer.	TIBOX	P
	- Type designation or identification number of the enclosure.	TIP/TX	P
	The marking shall be durable and easily legible and may be inside the enclosure.		P
	Compliance is checked according to the test of 9.2 and by inspection.		P
	The marking for recycling of plastic parts shall follow ISO / EN ISO 11469.		N/A
6.2	Documentation		
	The enclosure manufacturer's documentation shall include:		
	- relevant constructional and mechanical characteristics		N/A
	- material type		N/A
	- instruction necessary for the correct handling, assembling, mounting and service conditions of the enclosure.		N/A
	- reference to IEC / EN 62208		N/A
	Information concerning the thermal power dissipation relative to the effective cooling surface:		
	- by calculation (e.g. IEC/TR3 60890, CLC/TR 60890)	Method / Standard: Result: see Annex	N/A
	- by test (e.g. 8.2.1.4 of IEC / EN 60439-1)	Method / Standard: Result: see Annex	N/A
7	**SERVICE CONDITIONS**		
	Location for which the enclosure is intended	Outdoor	P
7.1	Normal service conditions		
7.1.1	Ambient air temperature		
7.1.1.1	- indoor locations (max. +40 °C, average over 24 h = 35°C; lower limit : -5°C)		N/A

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
7.1.1.2	- outdoor locations (max. +40 °C, average over 24 h = 35°C; lower limit : -25°C/ arctic: -50°C):		P
7.1.2	Atmospheric conditions		
7.1.2.1	- indoor locations (= 50% RH at max. +40°C)		N/A
7.1.2.2	- outdoor locations (up to 100% RH at max. +25°C)		P
7.1.3	Description of location		
	- outdoor locations: additional test according to 9.11 and 9.12		N/A
	- indoor locations: additional test according to 9.12.1 a)		N/A
7.2	Special service conditions		N/A
7.3	Conditions during transport and storage		N/A
8	**DESIGN AND CONSTRUCTION**		
8.1	General		
	The enclosure constructed of materials capable of withstanding the mechanical, electrical and thermal stresses, as specified in clause 9, as well as the		N/A
	effects of humidity which are likely to be encountered in normal use.		
	Protection against corrosion checked by the test of 9.12		N/A
	For enclosures or parts of enclosures made of insulating materials, thermal stability, resistance to heat, fire and weathering shall be verified according to test of 9.8 and 9.11		N/A
	Where parts of an enclosure are designed to retain current-carrying parts in position, the relevant standard shall apply for their design and verification.		N/A
8.2	Dimensions		
	Dimensions shall be given in [mm]		N/A
	The external dimensions: height, width and depth are nominal values and shall be indicated in the catalogue of the enclosure manufacturer.		N/A
	The projection of cable gland plates, removable covers and handles not included in the external nominal dimensions, the dimensions of such included in the manufacturer's documentation.		N/A
8.3	Mounting arrangements		

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
8.3.1	Enclosure		
	The location and means of the enclosure defined in the manufacturer's documentation.		N/A
8.3.2	Equipment mounting surface		
	The location of the equipment mounting surfaces and their means of fixing shall be defined in the manufacturer's documentation.		N/A
8.4	Static loads		
	The enclosure manufacturer specifies, in the documentation, the maximum permissible loads in the enclosure and on its door.		N/A
	Compliance checked according to the test of 9.3		N/A
8.5	Lifting and transport support		
	Where required, enclosures are provided with appropriate lifting device or transport means.		N/A
	The correct location, installation and thread size of lifting device, if applicable, is given in the manufacturer's documentation		N/A
	Compliance checked according to the test of 9.4		N/A
8.6	Access to the interior of the enclosure		
	A door or removable cover allow adequate access to the protected space. This may only be opened by use of a key or a tool.		N/A
	Cable gland plates and covers which are removable from the outside require the use of a tool.		N/A
8.7	Protective circuit		
	Metallic enclosures shall ensure the electric continuity.		N/A
	- by conductive structural parts of the enclosure		N/A
	- by separate protective conductor to earth		N/A
	The enclosure manufacturer shall indicate in the technical documentation, if the enclosure itself fulfils the requirements or if and how separate protective conductors to the protective circuits of the installation have to be carried out		N/A
	After remove of a removable part protective circuit of the remainder shall not be interrupted.		N/A

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	For lids, doors, removable covers and the like metal hinges may ensure continuity of the protective circuit provided no electrical equipment is attached to them.		N/A
	Where these are intended for mounting electrical equipment, additional means shall be provided to ensure the continuity of the protective circuit.		N/A
	Compliance is checked according to the test of 9.10		N/A
	The enclosure manufacturer shall provide means to facilitate the connection of the external protective conductor by the final assembly manufacturer. The location and the designed I^2t withstand capacity under fault conditions of such means shall be indicated in the enclosures manufacturers documentation.		N/A
8.8	Dielectric strength		
	Enclosure constructed of an insulating material fulfil the dielectric test of 9.9		N/A
8.9	Degree of protection (IK-Code)		
	Degree of protection according to IEC / EN 62262		N/A
	Compliance is checked according to the test of 9.6		N/A
8.10	Degree of protection (IP-Code)		
	Degree of protection according to IEC / EN 60529	IP65	P
	Compliance is checked according to the test of 9.7		P
9	**TYPE TESTS**		
9.2	Marking		
	Marking made by moulding or pressing shall not be submitted to this test.		
	Test: 15 s with water / 15 s with hexane		P
	After the test markings easily legible		P
9.3	Static loads		
	Enclosure fitted with 1,25 times the maximum load as described in 8.4	Enclosure: kg Door: kg	N/A
	Loads retained for 1h in the closed position		N/A
	Enclosure constructed of insulating material and metallic enclosures with parts (hinges, locks, etc.) of insulating material tested at 70°C		N/A

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	Closed door opened 5 times through 90°		N/A
	Resting in open position: 1 min.		N/A
	After the test enclosure shows no cracks or permanent distortions		N/A
	During the test no deflections which could impair any of its characteristics		N/A
9.4	Lifting		
	Enclosure loaded as in 9.3 with its door closed, lifted with the specified lifting means and in the manner defined by the manufacturer.	Enclosure: kg	N/A
	3 times: from standstill position to a height of 1 ± 0,1 m for 30 min, returning to standstill position		N/A
	3 times: from standstill position to a height of 1 ± 0,1 m and moved 10 ± 0,5 m horizontally; then set down. One cycle: 1 min ± 5 s at uniform speed		N/A
	After the test enclosure shows no cracks or permanent distortions		N/A
	During the test no deflections which could impair any of its characteristics		N/A
9.5	Verification of axial loads of metal inserts		
	Axial load according to table 2 applied for 10s	Size: M / Load: N	N/A
	After the test:		
	- the insert is in its original position		N/A
	- no cracks and splits in the material		N/A
	- no sign of movement		N/A
9.6	Verification of degree of protection against external mechanical impacts		
	- according to IEC / EN 62282 with a test hammer according to IEC / EN 60068-2-75		N/A
	Values according to table 3:	IK / Impact Energy = J	N/A
	- 3 times to each exposed surfaces in normal use whose largest dimensions is not above 1m		N/A
	- 5 times to each exposed surfaces in normal use whose largest dimensions is greater than 1m		N/A
	Impacts applied evenly distributed to the faces of the enclosure		N/A
	After the test:		

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	- enclosure continue to provide the IP code and dielectric strength		N/A
	- removable covers be removed and reinstalled		N/A
	- doors opened and closed		N/A
9.7	Verification of degree of protection (IP-Code)		
9.7.1.1	Verification of degree of protection against access to hazardous parts		
	Enclosures IPXXA, IPXXB, IPXXC, IPXXD according to 12.1 and 12.2 of IEC / EN 60529.	IP	N/A
	Access probe shall not enter the protected space		N/A
9.7.1.2	Verification of degree of protection against the ingress of solid foreign objects		
	Enclosures IP2X, IP3X, IP4X according to 13.2 and 13.3 of IEC / EN 60529.		N/A
	Enclosures IP5X according to 13.4 and 13.5 category 2 of IEC / EN 60529.		N/A
	Enclosures IP6X according to 13.6 of IEC / EN 60529.	Test duration: 8 hours. No talcum power was observable inside the enclosure.	P
9.7.2	Verification of degree of protection against ingress of water as indicated by the second characteristic numeral.		
	Test according to 14.1 and 14.2 of IEC / EN 60529.		P
	After the test, water has not ingressed into the protectived space.	IPX5 Internal diameter of the nozzle: 6,3mm; Delivery rate: 12,5l/min±5%; Distance from nozzle to enclosure surface: between 2,5m to 3m. Test duration: 3 min. No trace of water ingressed into the protected space.	P
9.7.3	Verification of degree of protection against hazardous parts as indicated by additional letter.		
	Test according to 15 of IEC / EN 60529.		N/A
	The access probe shall not touch the surface of the protected space.		N/A
9.8	Properties of insulating materials		
9.8.1	Verification of thermal stability		
	Test according to IEC / EN 60068-2-2		N/A

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	Temperature within the cabinet 70 ± 2°C		N/A
	Enclosure kept in the cabinet for 7 days (168h)		N/A
	After the treatment:		
	Enclosures are kept at ambient temperature and relative humidity between 45% and 55% for 4 days (96h)		N/A
	- enclosure shows no crack without additional magnifications		N/A
	- material became not sticky or greasy		N/A
	The forefinger wrapped in a dry piece of rough close is pressed with a force of 5N against the enclosure.		N/A
	No traces of the cloth remain to the enclosure and the material of the enclosure don't stick to the cloth.		N/A
9.8.2	Verification of resistance to heat		
	Temperature in the heating chamber 70 ± 2°C		N/A
	The surface of the part to be tested is placed in the horizontal position and a steel ball of 5 mm diameter is pressed against the surface with a force of 20N.		N/A
	Diameter of the impression caused by the steel ball not exceeding 2 mm	d = mm	N/A
9.8.3	Verification of resistance to abnormal heat and to fire.		
	Test in accordance with the principles of IEC / EN 60695-2-10 and the details of IEC / EN 60695-2-11.		N/A
	Tested as described in clause 4 of IEC / EN 60695-2-11		N/A
	Apparatus used as described in clause 5 of IEC / EN 60695-2-11		N/A
	Preconditioning of the samples:		
	Storage at 15 – 35°C / RH 35 – 45 % for 24h		N/A
	Thermocouple of test apparatus calibrated in accordance with clause 6 of IEC / EN 60695-2-10		N/A
	During test:		
	- clause 8 of IEC / EN 60695-2-10 followed		N/A
	- clause 10 of IEC / EN 60695-2-11 followed		N/A
	Temperature of the tip of the glow wire:		

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	- for parts retaining live parts in positions 960 ± 15°C		N/A
	Time at which sample ignited:	t_i = s	
	Time when sample extinguished:	t_e = ...s	
	- for parts intended to be installed in hollow walls 850 ± 15°C		N/A
	Time at which sample ignited:	t_i = s	
	Time when sample extinguished:	t_e = ...s	
	All other parts 650 ± 15°C		N/A
	Time at which sample ignited:	t_i = s	
	Time when sample extinguished:	t_e = ...s	
	No visible flame, no sustained glowing or flames and glowing extinguish within 30s		N/A
	No burning of the tissue paper, no scorching of the pinewood board		N/A
9.9	Verification of dielectric strength		
9.9.1	Preconditioning		
	Enclosures are placed in a humidity cabinet (relative humidity between 91% and 95%) and a air temperature of 40°C for 2 days (48h)		N/A
9.9.2	Enclosures without metal elements inside the protective space		
	A r.m.s voltage according to 8.2.2.2 of IEC / EN 60439-1 is applied for 1 min. between 2 metal foils, one in contact with the external surface and the other inside the enclosure at the limit of the protected space.		N/A
	Applied voltage:	U = V	N/A
9.9.3	Enclosure having metal elements in the protected space		
	All internal metallic parts are connected to a bar, a voltage according to 8.2.2.2 of IEC / EN 60439-1 is applied for 1 min. between a metal foil in contact with the external surface and the bar.		N/A
	Applied voltage:	U = V	N/A
9.9.4	Results to be obtained		
	- samples show no damage impairing their further use		N/A
	- no flashover or breakdown occurs during the test		N/A

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
9.10	Verification of the continuity of the productive circuit		
	Exposed conductive parts of the enclosure connected to the protective circuit		N/A
	Resistance not exceeding 0,1 Ω	Measured: Ω	N/A
9.11	Verification of resistance to weathering.		
	Samples of external parts constructed of synthetic materials or metals which are entirely coated by a synthetic material are tested		N/A
	UV-test according to ISO / EN ISO 4892-2 method A, cycles of 5 min. of watering and 25 min. of dry period with xenon-lamp providing a total test period of 500h.		N/A
	Temperature and humidity used for the test: - 65°C ± 3 °C; 65 ± 5 %RH or - declared by the manufacturer	Temperature: °C Humidity: %RH	N/A
	Compliance checked by verification:		
	- flexural strength (according to ISO / EN ISO 178) of synthetic materials have 70% min. retention		N/A
	~~- charpy impact (according to ISO / EN ISO 179) of~~ synthetic materials have 70% min. retention		N/A
	After the test samples are subjected to the glow wire test of 9.8.3		N/A
	After the test of 9.8.3 the adherence of protective coating of metal enclosures shall have 50 % minimum retention.		N/A
	Samples show no cracks or deterioration		N/A
9.12	Verification of resistance to corrosion		
	Metallic enclosures and external metallic parts of insulating and combined enclosures are tested to verify that they ensure protection against corrosion.		N/A
	In all cases hinges, locks and fastenings have to be tested.		N/A
9.12.1	Test procedure		
a)	Enclosures or metallic parts intended to be installed indoors and internal parts of enclosures intended to be installed outdoor.		

EN 62208			
Cl.	Requirement - Test	Result - Remark	Verdict
	- 6 cycles of 24h to damp heat cycling test according to test Db of IEC / EN 60068-2-30 at 40°C and relative humidity of 95% - 2 cycles of 24h to salt mist test according to test Ka of IEC / EN 60068-2-11 at a temperature of 35 ± 2 °C		N/A
b)	Enclosures or metallic parts intended to be installed outdoors.		
	- 12 cycles of 24h to damp heat cycling test according to test Db of IEC / EN 60068-2-30 at 40°C and relative humidity of 95% - 14 cycles of 24h to salt mist test according to test Ka of IEC / EN 60068-2-11 at a temperature of 35 ± 2 °C		N/A
9.12.2	Results to be obtained (after samples have been washed, water droplets have been removed and stored for 2h):		
	- no evidence of rust, cracking or other deterioration - seals are not damaged - doors, hinges, locks, fastenings and access means work without abnormal effort.		N/A
	The different exposed conductive parts of the enclosure are effectively connected to the protective circuit according to 9.10		N/A

TÜV Rheinland (Shanghai) Co. Ltd.
QMA 30.041.01SHG_7.14

TÜVRheinland®

Measurement and Test Equipment List

Used MTE

Revision: 20 July, 2007/ G.Luebken

Attachment: 1

Report No.: 15032236 001 **Order No.:** 15312054 5

Description	MTE Type/model Internal ID	Next Calibration Date
☐ *Automatic Cord Reel Test Apparatus*	None Z311	04.04.2010
☐ *Water Kettle Coupling ON/OFF Tester*	None Z312	04.04.2010
☒ *Dust Test Unit*	ST1000-U Z328	17.10.2011
☐ *Arrangement for impact test for cable glands*	None Z419	14.08.2010
☐ *Drop Tester for Iron*	None Z489	15.09.2011
☐ *Bending Test Apparatus for Internal Wire*	None Z490	11.01.2010
☐ *IPX1 & IPX2 Tester*	None Z491-1, Z491-2	08.04.2012
☐ *Tumbling Barrel for IEC68-2-32 Amend 2:1990*	None Z509	11.01.2010
☐ *Test arrangement for checking mechanical withstanding of insulating materials in thin sheet layers*	None Z512	16.02.2012
☐ *Spillage test device for water kettle*	None Z536	09.05.2012
☐ *5HP Balanced Room Type Calorimeter*	None Z671	31.07.2009
☒ *IPX3~IPX6 Tester*	DEY1-01 Z747	06.04.2010
☐ *Combustible Gas Detector*	XP-3110 Z780	12.10.2009

Date and Signature: 04.06.2009 ZHJ

TÜV Rheinland (Shanghai) Co., Ltd.
TÜV Rheinland Group
Laboratory