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# **Technical Construction File**

# EN 60947-7-1:2009

# Low-voltage switchgear and controlgear -

Part 7-1: Ancillary equipment - Terminal blocks for copper conductors

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Report reference No	The phen
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Date of issue:	December 08, 2023
Reviewing laboratory:	Shanghai Global Testing Services Co., Ltd.
	Floor 3rd, Building D-1, No. 128, Shenfu Road, Minhang District, Shanghai, China.
Applicant:	Zhejiang Changcheng Trading Co., Ltd.
Address:	DianHou Village, Liushi Town, Yueqing City, Zhejiang, China
Manufacturer:	CNC Electric Group Zhejiang Technology Co., Ltd.
Address:	DianHou Village, Liushi Town, Yueqing City, Zhejiang, China
Factory:	The same as manufacturer
Address:	The same as manufacturer
Standard:	⊠ EN 60947-7-1:2009
Review Report Form No:	60947-7-1
TRF originator:	GTS
Master TRF:	Reference No. EN 60947-7-1:2009
Review procedure:	GTS
Type of Review object:	Terminal connector
Trademark:	1
Model/type reference:	See page 3
Main Model:	JXB-2.5



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Possible review case verdicts:

- review case does not apply to the test object.....: N(.A.)

- review object does meet the requirement.....: P(ass)

- review object does not meet the requirement...... F(ail)

### General remarks:

"(see remark #)" refers to a remark 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.

The review results presented in this report relate only to the object reviewed.

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### Testing:

Date of receipt of review item: September 14, 2023

Date(s) of performance of review: September 14, 2023 to December 08, 2023

## General product information:

Terminal connector

## Summary of reviewing:

This review report includes:

Annex I: 2 page(s) of photo documentation.

Copy of marking plate





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#### Models:

JXB-2.5,JXB-4,JXB-6,JXB-10,JXB-16,JXB-35,JXB-50,JXB-70,EK-2.5,EK-4,EK-6,EK-10,EK-16, EK-35,UK-1.5N,UK-2.5B,UK-3N,UK-5N,UK-6N,UK-10N,UK-16N,UK-35N,UKH-50N,UKH-95N, UKH-150N,USLKG-2.5,USLKG-3,USLKG-5,USLKG-6,USLKG-10,USLKG-16,USLKG-35,TB-1003,TB-1004, TB-1006,TB-1503,TB-1504,TB-1505,TB-1506,TB-1510,TB-1512,TB-2503,TB-2504, TB-2504,TB-2505,TB-2506,TB-2510,TB-2512,TB-2516,TB-2520,TB-3503,TB-3504,TB-3506, TB-3512,TB-4503,TB-4504,TB-4505,TB-4506,TB-4512,TB-6003,TB-6004,TB-6006,TC-603, TC-604,TC-1003,TC-1004,TC-1503,TC-1504,TC-2003,TC-2004,TC-3003,TC-3004,TC-4003, TC-4004,TC-6003,TC-6004,X3-0312,X3-0512,X3-0612,X3-1012,X3-1512,X3-2012,X3-3012, X3-6012,X3-8012,X3-10012,X3-15012,HC-001,HC-002,HC-003,HC-004,HC-005,HC-006,HC-007,HC-008,H C-009,HC-010,HC-012,HC-012,HC-013,HC-014,HC-015,HC-016,HC-017,HC-018, HC-019,HC-020,HC-021,HC-022,HC-023,HC-024,HC-025,HC-026,FTUKK,UKK



conditions

	EN 60947- 7-1			
Clause		Result - Remark	Verdict	
5	Product information		Р	
5.1	Marking		Р	
	A Terminal blocks block shall be marked in a		Р	
	durable and legible manner with the following:			
	a) the name of the manufacturer or a trade mark	CNC Electric Group Zhejiang	Р	
	by which the manufacturer can be readily	Technology Co., Ltd.		
	identified;			
	b) a type reference permitting its identification in		Р	
	order to obtain relevant information from the			
	manufacturer or his catalogue.			
5.2	Additional information		Р	
	The following information shall be stated by the		Р	
	manufacturer, if applicable, e.g. in the			
	manufacturer's data sheet or his catalogue or on			
	the packing unit:			
	a) IEC 60947-7-1, if the manufacturer claims		Р	
	compliance with this standard;			
	b) the rated cross-section;		Р	
	c) the rated connecting capacity, if different from		Р	
	table 2, including the number of conductors			
	simultaneously connectable;			
	d) the rated insulation voltage;		Р	
	e) the rated impulse withstand voltage, when		Р	
	determined;			
	f) service conditions, if different from those of		Р	
	clause 6.			
6	Normal service, mounting and transport		Р	
	conditions			
6.1	Normal service conditions		Р	
	Equipment complying with this standard shall be		Р	
	capable of operating under the following standard			



	NOTE For non-standard conditions in service, see	В
	Annex B. These may require agreement between	P
	manufacturer and user.	
6.1.1	Ambient air temperature	Р
	The ambient air temperature does not exceed	Р
	+40 °C and its average over a period of 24 h does	
	not exceed +35 °C.	
	The lower limit of the ambient air temperature is	Р
	–5 °C.	·
	Ambient air temperature is that existing in the	Р
	vicinity of the equipment if supplied without	
	enclosure, or in the vicinity of the enclosure if	
	supplied with an enclosure.	
	NOTE 1 Equipment intended to be used in	Р
	ambient air temperature above +40 °C (e.g. in	
	forges, boiler rooms, tropical countries) or below	
	–5 °C (e.g. –25 °C, as required by IEC 60439-1	
	for outdoor installed low-voltage switchgear and	
	controlgear assemblies) should be designed or	
	used according to the relevant product standard,	
	where applicable, or according to agreement	
	between manufacturer and user.	
	Information given in the manufacturer's catalogue	Р
	may take the place of such an agreement.	
	NOTE 2 Standard reference air temperature for	Р
	certain types of equipment, e.g., circuit-breakers	
	or overload relays for starters, is indicated in the	
	relevant product standard.	
6.1.2	Altitude	Р
	The altitude of the site of installation does not	P
	exceed 2 000 m.	-
	NOTE For equipment to be used at higher	Р
	altitudes, it is necessary to take into account the	-
	reduction of the dielectric strength and the cooling	
	effect of the air.	
	Electrical equipment intended to operate under	 Р
	these conditions shall be designed or used in	
	accordance with an agreement between	
	manufacturer and user.	
6.1.3	Atmospheric conditions	Р
6.1.3.1	Humidity	Р



	The relative humidity of the air does not exceed	Р
	50 % at a maximum temperature of +40 °C.	
	Higher relative humidities may be permitted at	Р
	lower temperatures, e.g. 90 % at +20 °C.	
	Special measures may be necessary in cases of	Р
	occasional condensation due to variations in	
	temperature.	
	NOTE Pollution degrees, as stated in 6.1.3.2,	Р
	define the environmental conditions more	
	precisely.	
6.1.3.2	Pollution degree	Р
	The pollution degree (see 2.5.58) refers to the	Р
	environmental conditions for which the equipment	'
	is intended.	
	NOTE 1 The micro-environment of the creepage	Р
	distance or clearance and not the environment of	Г
	the equipment determines the effect on the	
	insulation.	
	The micro-environment might be better or worse	Р
	than the environment of the equipment.	F
	It includes all factors influencing the insulation,	Р
	such as climatic and electromagnetic conditions,	F
	generation of pollution, etc.	
	For equipment intended for use within an	Р
	enclosure or provided with an integral enclosure,	F
	the pollution degree of the environment in the	
	enclosure is applicable.	
	For the purpose of evaluating clearances and	n
	creepage distances, the following four degrees of	Р
	pollution of the micro-environment are established	
	(clearances and creepage distances according to	
	the different pollution degrees are given in Tables	
	13 and 15):	
	Pollution degree 1	N
	No pollution or only dry, non-conductive pollution	N
	occurs.	l IN
	Pollution degree 2:	N
	Normally, only non-conductive pollution occurs.	N
	Occasionally, however, a temporary conductivity	l IN
	caused by condensation may be expected.	
	Pollution degree 3:	Р



	Conductive pollution occurs, or dry,	Р
	non-conductive pollution occurs which becomes	
	conductive due to condensation.	
	Pollution degree 4:	N
	The pollution generates persistent conductivity	N
	caused, for instance, by conductive dust or by rain	
	or snow.	
	Standard pollution degree of industrial	N
	applications:	
	Unless otherwise stated by the relevant product	N
	standard, equipment for industrial applications is	.,
	generally for use in pollution degree 3	
	environment.	
	However, other pollution degrees may be	N
	considered to apply depending upon particular	.,
	applications or the micro-environment.	
	NOTE 2 The pollution degree of the	Р
	micro-environment for the equipment may be	•
	influenced by installation in an	
	enclosure.	
	Standard pollution degree of household and	Р
	similar applications	-
	Unless otherwise stated by the relevant product	Р
	standard, equipment for household and similar	
	applications is generally for use in pollution	
	degree 2 environment.	
6.1.4	Shock and vibration	Р
	Standard conditions of shock and vibration to	Р
	which the equipment can be submitted are under	
	consideration.	
6.2	Conditions during transport and storage	 Р
	A special agreement shall be made between user	Р
	and manufacturer if the conditions during	·
	transport and storage, e.g. temperature and	
	humidity, differ from those defined in 6.1, except	
	that, unless otherwise specified, the following	
	temperature range applies during transport and	
	storage: between –25 °C and +55 °C and, for	
	short periods not exceeding 24 h, up to +70 °C.	



	Equipment subjected to these extreme	Р
	temperatures without being operated shall not	
	undergo any irreversible damage and shall then	
	operate normally under the specified conditions.	
6.3	Mounting	Р
	The equipment shall be mounted in accordance	Р
	with the manufacturer's instructions.	-

7.1	Constructional and performance requirement	-
7.1.1	Materials	Р
	Resistance to abnormal heat and fire (according to	Р
	8.1.1.1 of IEC 60947-1) of insulating	
	current-carrying parts	
	The suitability of materials used is verified by	Р
	making tests:	
	a) on the equipment; or	Р
	b) on sections taken from the equipment; or	Р
	c) on samples of identical material having	P
	representative cross-section.	'
	The suitability shall be determined with respect to	Р
	resistance to abnormal heat and fire.	
	The manufacturer shall indicate which tests,	Р
	amongst a), b) and c), shall be used.	
	If an identical material having representative	Р
	cross-sections has already satisfied the	
	requirements of any of the tests of 8.2.1, then	
	those tests need not be repeated.	
	Clamping units	Р
	The clamping units shall allow the conductors to	Р
	be connected by means ensuring that a reliable	
	mechanical linkage and electrical contact is	
	properly maintained.	
	NOTE Screw-type clamping units are not suitable	Р
	for the connection of flexible conductors with tin	
	soldered ends.	
	The clamping units shall be able to withstand the	Р
	forces that can be applied through the connected	
	conductors.	
	Compliance is checked by inspection and by the	Р
	tests of 8.3.3.1, 8.3.3.2 and 8.3.3.3.	



	No contact pressure shall be transmitted through	Р
	insulating materials other than ceramic, or other	
	material with characteristics not less suitable,	
	unless there is sufficient resiliency in the metallic	
	parts to compensate for any possible shrinkage of	
	the insulating material.	
	The corresponding test is under consideration	Р
7.1.2	Mounting	Р
	Terminal blocks blocks shall be provided with	Р
	means that allow them to be securely attached to	
	a rail or a mounting surface.	
	Tests shall be made in accordance with 8.3.2.	Р
	NOTE Information on mounting on rails can be	Р
	found in IEC 60715.	
7.1.3	Clearances and creepage distances	Р
	For Terminal blocks blocks for which the	Р
	manufacturer has stated values of rated impulse	
	withstand voltage Uimp and rated insulation	
	voltage $U$ i, minimum values of clearances and	
	creepage distances are given in tables 13 and 15	
	of IEC 60947-1.	
	For Terminal blocks blocks for which the	Р
	manufacturer has determined no value of rated	
	impulse withstand voltage Uimp, guidance for	
	minimum values is given in annex A	
	Electrical requirements are given in 7.2.2	Р

7.1.4	Terminal blocks identification and marking	Р
	Subclause 7.1.7.4 of IEC 60947-1 applies with the	Р
	following addition.	
	A Terminal blocks block shall have provision, or at	Р
	least space, for identification marks or numbers	·
	for each clamping unit or Terminal blocks	
	assembly related to the circuit of which it forms a	
	part.	
	NOTE Such provision may consist of separate	Р
	marking items, such as marking tags,	·
	identification labels, etc.	
7.1.5	Resistance to abnormal heat and fire	Р



	The insulation materials of Terminal blocks blocks shall not be adversely affected by abnormal heat	Р
	and fire.	
	Compliance is checked by the needle flame test	Р
	according to IEC 60695-2-2 (see note in 7.1.1.1 of	·
	IEC 60947-1), as specified in 8.5 of this standard.	
7.1.6	Rated cross-section and rated connecting capacity	Р
	Terminal blocks blocks shall be so designed that	Р
	conductors of the rated cross-section and the	P
	rated connecting capacity, if applicable, can be	
	accepted.	
	Compliance is checked by the test described in	Р
	8.3.3.4.	
	The verification of the rated cross-section may be	Р
	performed by the special test according to 8.3.3.5.	'
7.2	Performance requirements	Р
7.2.1	Temperature-rise	P
7.2.1	Terminal blocks blocks shall be tested in	
	accordance with 8.4.5. The temperature-rise of	P
	the Terminal blocks shall not exceed 45 K.	
7.2.2	Dielectric properties	Р
7.2.2	If the manufacturer has declared a value of the	
	rated impulse withstand voltage <i>U</i> imp (see 4.3.1.3	P
	of IEC 60947-1), the requirements of 7.2.3 and	
	7.2.3.1 of IEC 60947-1 apply.	
	If applicable, the impulse withstand voltage test	Р
	shall be carried out in accordance with 8.4.3 a).	F
	For the verification of solid insulation, the	Р
	requirements of 7.2.3, 7.2.3.2 and 7.2.3.5 of IEC	
	60947-1 apply.	
	The power-frequency withstand voltage test shall	Р
	be carried out in accordance with 8.4.3 b).	'
	The verification of sufficient clearances and	Р
	creepage distances shall be made in accordance	· ·
	with 8.4.2.	
	If no value of <i>U</i> imp has been declared, the	Р
	If no value of <i>U</i> imp has been declared, the verification of clearance and creepage distances	Р



7.2.3	Rated short-time withstand current	Р
	A Terminal blocks block shall be capable of	Р
	withstanding for 1 s the rated short-time withstand	•
	current which corresponds to 120 A/mm2 of its	
	rated cross-section, in accordance with 8.4.6.	
7.2.4	Voltage drop	Р
	The voltage drop on a Terminal blocks block	Р
	caused by the conductor connection, measured	•
	according to 8.4.4, shall not exceed the values	
	specified in 8.4.4 and, where applicable, in 8.4.7.	
7.2.5	Electrical performance after ageing (for	Р
1.2.0	screwless-type Terminal blocks blocks only)	•
	Terminal blocks blocks shall be capable of	Р
	withstanding the ageing test comprising 192	'
	temperature cycles in accordance with 8.4.7.	
7.3	Electromagnetic compatibility (EMC)	Р

8	Tests	Р
8.1	Kinds of test	Р
	Subclause 8.1.1 of IEC 60947-1 applies with the following addition.	Р
	No routine tests are specified.	Р
	The verification of the rated cross-section according to 8.3.3.5 is a special test. All other tests are type tests.	Р
8.2	General	Р
8.3	Verification of Mechanical properties of Terminal blocks	-
8.3.1	General	
8.3.3.1	Mechanical strength of Terminal blocks	Р
	maximum cross-sectional area of conductor (mm²):	-
	diameter of thread (mm):	-
	torque (Nm):	-
	5 times on 2 separate clamping units	Р
8.3.3.2	Testing for damage to and accidental loosening of conductor (flexion test)	-
	Subclauses 8.2.4.1 and 8.2.4.3 of IEC 60947-1 apply with the following modification. Each test shall be carried out on two clamping units of one Terminal blocks block.	



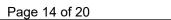
	1	
For screw-type clamping units with a diameter of		
threads up to and including 2,8 mm, the tightening		
torque shall be in accordance with table C.1 or the		
torque specified by the manufacturer.		
The tests shall be made with the type (rigid and/or		
flexible) and the number of conductors stated by		
the manufacturer as follows:		
with the different types of conductor of the		
specified smallest cross-section (only one		
conductor connected);		
with the different types of conductor of the		
specified rated cross-section (only one conductor		
connected);		
and, if applicable,		Р
– with the type(s) of conductor of the largest		Р
connectable cross-section, if larger than the rated		
cross-section (only one conductor connected);		
- with the different types and maximum number of		Р
conductors of the smallest cross-section		
simultaneously connectable;		
- with the different types and maximum number of		Р
conductors of the largest cross-section		
simultaneously connectable;		
- with the different types and maximum number of		Р
conductors of the smallest and largest		
cross-section simultaneously connectable.		



8.3.3.3	Pull-out test		Р
	Force (N):		-
	1 min, the conductor shall neither slip out of the	No slip out, no break near the	Р
	Terminal blocks nor break near the clamping unit	clamping unit	

	Flexion test	N
	conductor of the largest cross-sectional area	-
	(mm²):	
	number of conductor of the largest	-
	cross-sectional:	
	diameter of bushing hole (mm):	-
	Height between the equipment and the platen	-
	(mm):	
	Mass at the conductor(s) (kg):	-
	135 continuous revolutions: the conductor shall	Р
	neither slip out of the Terminal blocks nor break	
	near the clamping unit	
8.3.4	Connecting capacity	Р
	type of conductors:	-
	minimum cross-sectional area of conductor	-
	(mm²):	
	maximum cross-sectional area of conductor	-
	(mm²):	
	number of conductors simultaneously	-
	connectable to the Terminal blocks:	
8.3.5	Connection	Р
	Terminal blocks for connection to external	Р
	conductors shall be readily accessible during	
	installation	
	clamping screws and nuts shall not serve to fix	Р
	any other component	

8.4.2	Verification of clearances and creepage distances	
8.4.2.1	General	Р
8.4.2.2	Clearances	Р





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	Rated impulse withstand voltage	P
	Creepage distances	-
	Pollution degree:	Р
	Comparative tracking index (V):	Р
	Material group	Р
	Rated insulation voltage Ui (V)	Р
	Minimum creepage distances (mm):	_
	Measured creepage distances (mm)	Р
	In case Uimp is not indicated	Р
8.4.4	Verification of the voltage drop	Р
	The voltage drop shall be verified	Р
	a) before and after the test of mechanical strength of clamping units (see 8.3.3.1);	Р
	b) before and after the temperature-rise test (see 8.4.5);	Р
	c) before and after the short-time withstand current test (see 8.4.6);	Р
	d) before, during and after the ageing test (see 8.4.7).	Р
	The verification is made as specified in 8.3.3.1, 8.4.5, 8.4.6 and 8.4.7.	Р
	The voltage drop is measured on each Terminal blocks block as indicated in figure 2.	Р
	The measurement is made with a direct current of 0,1 times the value given in table 4 or table 5.	Р
	Before the tests according to a), b), c) and d) above, the voltage drop shall not exceed 3,2 mV.	Р
	If the measured value exceeds 3,2 mV, the voltage drop is determined on each individual clamping unit separately, which shall not exceed 1,6 mV.	Р
	After the tests according to a), b) and c), the voltage drop shall not exceed 150 % of the values measured before the test.	Р



During and after the test according to d), the voltage drop measured shall not exceed the values specified in 8.4.7.	Р
Measuring point voltage drop  Measuring point voltage drop  Measuring point voltage drop	P

8.4.5	Temperature rise	-
	The test is made simultaneously on five adjacent	Р
	Terminal blocks blocks connected in series by	-
	PVC insulated conductors of the rated	
	cross-section, as shown in figure 2.	
	The conductors shall be tightened with a torque	Р
	according to table 4 of IEC 60947-1, with the	
	respective table C.1 for screw-type clamping units	
	with a diameter of threads up to and including 2,8	
	mm, or to a higher value specified by the	
	manufacturer, if applicable.	
	The minimum length of each of the six conductors	Р
	shall be 1 m for rated cross-sections up to and	'
	including 10 mm2 (AWG 8), and 2 m for larger	
	rated cross-sections.	
	The test circuit shall be located horizontally on a	Р
	wooden surface as shown in figure 2 (e.g. table	'
	top or floor), the Terminal blocks blocks being	
	securely fixed to this surface and the conductors	
	lying freely on it.	



	If the rated cross-section is below 10 mm2 (AWG		Р
	8), the conductors shall be solid. For rated		
	cross-sections equal to or higher than 10 mm2		
	(AWG 8), the conductors shall be rigid stranded.		
	Dur ing the test, screws of clamping units shall not		
	be retightened.		
	After verification of the voltage drop according to		Р
	8.4.4, the test is made with a.c. singlephase		·
	current as given in table 4 or table 5 according to		
	the rated cross-section, and is continued until		
	steady temperature is reached.		
	A variation of less than 1 K between any two out		Р
	of three consecutive measurements made at an		
	interval of 5 min is considered as steady		
	temperature.		
	For multi-tier Terminal blocks blocks, the test is		Р
	made either with an a.c. single-phase current as		
	given in table 4 or table 5, or with the current		
	specified by the manufacturer.		
	The temperature-rise of any part of the centrally		P
	located Terminal blocks block shall not exceed		
	the limit given in 7.2.1 (see figure 2).		
	At the end of the test, after cooling down to		Р
	ambient air temperature and without any change		
	in the arrangement, the Terminal blocks blocks		
	shall pass the voltage drop test according to 8.4.4.		
	ambient temperature 10-40 °C:		_
	Contactor		-
	test enclosure W x H x D (mm x mm x mm):		_
	material of enclosure:		
	Indicate of choiceard	pidono	I
8.4.6	Short-time withstand current test		-
	The purpose of this test is to verify the ability to		Р
	withstand a thermal shock.		·
			_
	The test is performed on one Terminal blocks		P
	block installed according to the manufacturer's		
I	instructions.	1	



It is wired with a conductor of the rated cross-section, tightened with the torque according to table 4 of IEC 60947-1, with the respective table C.1 for screw-type clamping units with a diameter of threads up to and including 2,8 mm, or with a higher value specified by the manufacturer, if applicable.	Р
If the rated cross-section is below 10 mm2 (AWG 8), the conductors shall be solid. For rated cross-sections equal to or higher than 10 mm2 (AWG 8), the conductors shall be rigid stranded.	Р
After verification of the voltage drop according to 8.4.4, the value and the duration of the test current shall be in accordance with 7.2.3.	Р
At the end of the test no damage that may impair further use shall have occurred to any part of the Terminal blocks block.	Р
After cooling down to ambient temperature and without any change in the arrangement, the Terminal blocks block shall pass the voltage drop test according to 8.4.4.	Р

8.4.7	Ageing test for screwless-type Terminal	-
	blocks blocks	
	The test is made simultaneously on five adjacent	Р
	Terminal blocks blocks connected in series by	
	conductors of the rated cross-section, as shown in	
	figure 2.	
	If the rated cross-section is below 10 mm2 (AWG	Р
	8), the conductors shall be solid. For rated	
	cross-sections equal to or higher than 10 mm2	
	(AWG 8), the conductors shall be rigid stranded.	
	For Terminal blocks blocks intended for use under	Р
	"normal service conditions" (maximum 40 ° C	
	according to 6.1.1 of IEC 60947-1), PVC-insulated	
	conductors shall be used.	
	For Terminal blocks blocks for which the	Р
	manufacturer has specified "maximum service	
	conditions above 40 ° C" (see 6.1.1, note 1, of	
	IEC 60947-1), heat-resistant, insulated or	
	non-insulated conductors shall be used.	



The minimum length of the conductor bridges		Р
shall be 300 mm.		
The Terminal blocks blocks are placed in a		Р
heating cabinet which is initially kept at a		
temperature of (20 +/- 2) ° C and then submitted		
to the verification of the voltage drop test.		
The whole test arrangement, including the		Р
conductors, shall not be moved until the voltage		
drop test has been completed.		
The Terminal blocks blocks are submitted to 192		Р
temperature cycles as follows.		
The temperature in the heating cabinet is		Р
increased to 40 ° C according 8.3.3.3.1 of IEC		
60947-1 or to the temperature value declared by		
the manufacturer for "maximum service		
conditions".		
The temperature is maintained within _5 ° C of		Р
this value for approximately 10 min.		
During this test period the current according to		Р
8.4.5 is applied.		
The Terminal blocks blocks are then cooled down		Р
to a temperature of approximately 30 ° C, forced		
cooling being allowed; they are kept at this		
temperature for approximately 10 min and, if		
necessary for measuring the voltage drop, it is		
allowed to cool down further to a temperature		
of (20 _ 5) ° C.		
NOTE As a guide, a value for the heating and		Р
cooling rate of the heating cabinet of		•
approximately 1,5 ° C/min may be taken as a		
basis.		
The voltage drop in each Terminal blocks block is		Р
also determined according to 8.4.4 after each of		'
24 temperature cycles and after the 192		
temperature cycles have been completed, each		
time at a temperature of (20 +/- 5) ° C.		
In no case the voltage drop shall exceed 4,8 mV		P
or 1,5 times the value measured after the 24th		'
cycle, whichever is the lower.		
1 * '	I	l



	If one of the Terminal blocks blocks does not	P
	withstand the test, the test is repeated on a	
	second set of Terminal blocks blocks, all of which	
	shall then comply with the repeated test.	
	After this test, a visual inspection shall show no	Р
	changes impairing further use such as cracks,	
	deformations or the like.	
	Furthermore, the pull-out test according to 8.3.3.3	Р
	shall be carried out.	
	Max temperature	P
8.5	Test of resistance to heat	-
8.5.1	Test:	Р
	- without removable covers 1 h (100 ± 2) °C	Р
	- removable covers 1 h (70 ± 2) °C	Р
	After the test no access to live parts, marking still	Р
	legible	
8.5.2	Ball pressure test for external parts of insulating	Р
	material (parts retaining current-carrying parts	
	and parts of the protective circuit in position)	
	T = 125°C	
	Ø of impression ≤ 2 mm	
8.5.3	Ball pressure test for external parts of insulating	N
	material (parts not retaining current-carrying parts	
	and parts of the protective circuit in position	
	$T = (70 \pm 2)^{\circ}C$ or	
	T = $\_\_$ °C = $(40 \pm 2)$ °C + max. temperature rise	
	of sub-clause 8.8	
	Ø of impression ≤ 2 mm	
8.5.4	Resistance to abnormal heat and to fire	Р
	External parts of insulating material shall not	Р
	ignite or spread fire under fault or overload	
	conditions	
8.5.5	Resistance to abnormal heat and to fire	Р
	Glow wire test:	
	No visible flame, no sustained glowing or flames	Р
	and glowing extinguish within 30 s	



	external parts retaining current-carrying parts and parts of the protective circuit in position	Terminal blocks block body  no flame and no glowing on the sample.	Р
	all other external parts(650 ± 10)°C	s	N
	Needle flame test	Terminal blocks body: no flame and no glowing on the sample. Flame extinguished in 3s	Р
8.6	Verification of EMC characteristics		N/A
8.6.1	Immunity		N/A
	Terminal blocks blocks within the scope of this standard are not sensitive to electromagnetic disturbances and therefore no immunity tests are necessary.		N/A
8.6.2	Emission		N/A
	Terminal blocks blocks within the scope of this standard do not generate electromagnetic disturbances and therefore no emission tests are necessary.		N/A

<sup>-</sup> End of Test Report -



Annex I:

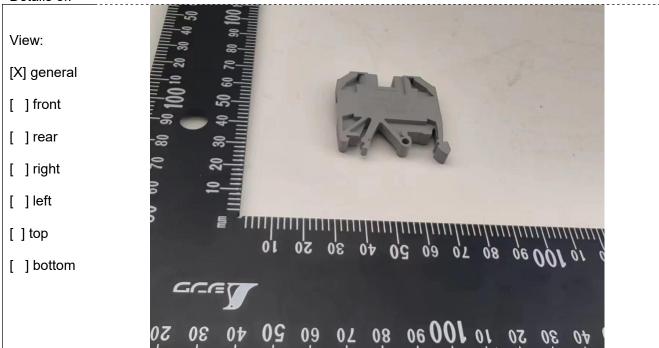
**Photo documentation** 

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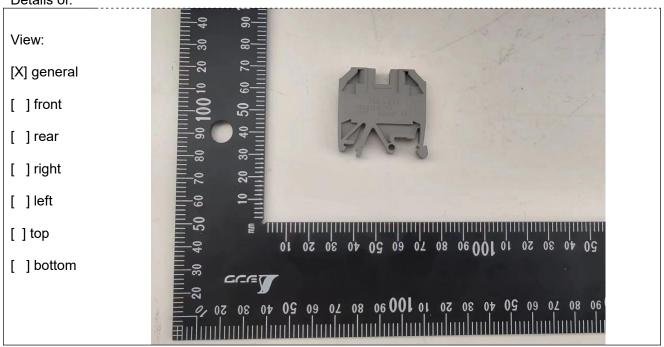
Type of equipment:

Terminal connector See page 3

# Details of:



# Details of:





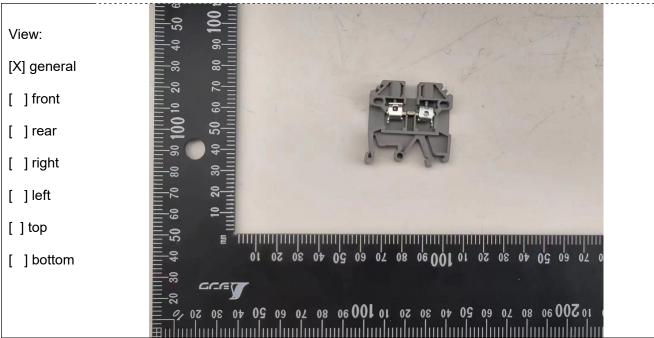
Annex I:

## Photo documentation

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## Details of:



# Details of:

