



EN 60947-1:2007/A2:2014
EN 60947-3:2009/A2:2015

LVD MEASUREMENT AND TEST REPORT For


WENZHOU CHANGJIANG ELECTRICAL APPLIANCE FACTORY

5th Lingyun Rd, Liushi, Yueqing City, Zhejiang Province, P R China

Model: LW30

2017-09-04

This Report Concerns: <input checked="" type="checkbox"/> Original Report		Equipment Type: ROTARY SWITCH	
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1 – GENERAL INFORMATION

1.1 Product Description for Equipment Under Test (EUT)

The *WENZHOU CHANGJIANG ELECTRICAL APPLIANCE FACTORY'S* product, Model *LW30*, or the "EUT" as referred to in this report is a ROTARY SWITCH. Product's details are presented in Appendix B of this report as reference.

1.2 Objective

The following Declaration of Conformity of Low-voltage Equipment is prepared on behalf of *WENZHOU CHANGJIANG ELECTRICAL APPLIANCE FACTORY*, in accordance with EN 60947-1:2007/A2:2014, and EN 60947-3:2009/A2:2015. The objective of the manufacturer is to demonstrate compliance with EN 60947-1:2007/A2:2014 and EN 60947-3:2009/A2:2015. There have references six tests to be performed.

They are as follows:

- 1) Marking contents check
- 2) Temperature-rise test
- 3) Dielectric properties test
- 4) Test of mechanical strength of terminals
- 5) Clearance and creepage distance check test
- 6) Test of resistance to abnormal heat and fire

Data has been collected, reduced, and analyzed within this report in accordance with EN 60947-1:2007/A2:2014 and EN 60947-3:2009/A2:2015. To demonstrate compliance, the manufacturer or a contracted laboratory makes measurements and takes the necessary steps to ensure that the equipment complies with the appropriate technical standards.

1.3 Related Submittal(s)/Grant(s)

No Related Submittals

1.4 Test Methodology

All measurements contained in this report were conducted with EN 60947-1:2007/A2:2014, and EN 60947-3:2009/A2:2015. All measurement was performed at A03 LAB OF BTS.

1.5 Test Facility

The safety facility used by A03 LAB OF BTS to collect data is located at No.1 Fanghua Street, Hi-tech Zone, Chengdu 610041, P. R. China.

1.6 Test Equipment List and Details

Manufacturer and Model	Instrument Type	Instrument ID	Cal. Due Date
DKG- II	Thermal and Performance Test Station For Low-voltage Switchgear	742-004	2018.05.14
Agilent 34970Aacqu	Data Acquisition Switch Unit	TT11-008	2017.09.27
DTM-3	Digital Millisecond Meter	HT11-003	2017.09.03
D26-A	AC/DC Current Meter	EI04-004	2018.08.13
BE256	Data Acquisition System	EI56-002	2017.09.21
HL23-1	Current Transformer	EH01-007	2018.08.23
TD-III	Life Test Device For Breaking Capacity(AC-4)	744-001	2018.05.21
GNS- I	Hypot Tester	745-004	2017.10.10

1.7 Equipment Under Test (EUT) General Description

Manufacturer	Description	Model	Serial Number	Chip Set
WENZHOU CHANGJIANG ELECTRICAL APPLIANCE FACTORY	ROTARY SWITCH	LW30	300010	None

2 – MARKING CONTENTS CHECK TEST

2.1 Test Method

The following information shall be indelible and easily legible marked on the EUT.

2.2 Test Result

- (x) The marking is easily to see.
- (x) Each circuit-breaker shall be marked in durable manner.
- (x) The marking contains some necessary contents.

1	The Name and Mark of Manufacture	WENZHOU CHANGJIANG ELECTRICAL APPLIANCE FACTORY
2	Model	LW30
3	Compliance with this standard	EN60947-1, EN60947-3
4	Rated Frequency	50 Hz
5	Rated Operational Voltage (U_e)	220~240V / 400~440V AC
6	Rated Insulation Voltage (U_i)	690V AC
7	Rated Current	40 A
8	I_{cw}	360 A
9	Indication of the open and closed positions	O (OFF) & I (ON)

2.3 Verdict:

- (x) Pass
- () Fail

3 – DIELECTRIC PROPERTIES TEST

3.1 Power-frequency withstand verification of solid insulation

The test voltage shall have practically sinusoidal waveform and frequency between 45 Hz and 65Hz. The value of the test voltage shall be as follows: for the main circuit, and for the control and auxiliary circuits, in accordance with table 12A in EN60947-1. The uncertainty of measurement of the test voltage shall not exceed $\pm 3\%$. The test voltage shall be applied for 5s.

In opened position

PRODUCT / COMPONENT	LW30	
Between	Line terminals	Metal terminals
And	Load terminals	Frame
Rated insulation Voltage	AC690V	
Test Voltage	1890V	1890V
AC/DC	AC	

In closed position

PRODUCT / COMPONENT	LW30	
Between	Each pole	Metal terminals
And	Other than the pole	Frame
Rated insulation Voltage	AC690V	
Test Voltage	1890V	1890V
AC/DC	AC	

3.2 Test Result

(x) There is No flashover, breakdown of insulation.

3.3 Verdict:

(x) Pass

() Fail

4 – TEMPERATURE-RISE TEST

4.1 Test Method

The circuit-breaker shall be mounted complete on its own support or an equivalent support.

The ambient air temperature does not exceed +40 ° C and its average over a period of 24h does not exceed +35 ° C. the lower limit of the ambient air temperature is -5 ° C.

The main circuit of a circuit-breaker, including the over-current release which may be associated with it , shall be capable of carrying the conventional thermal current without the temperature-rises exceeding the limits specified in table 7 in EN60947-2:2003.

The control circuits, including control circuit devices, used for the closing and opening operations of a circuit-breaker, shall permit the rated duty and to be made the temperature-rise tests without the temperature-rises exceeding the limits specified in table 7 in EN60947-2:2003

Auxiliary circuits, including auxiliary device, shall be capable of carrying the conventional thermal current without the temperature-rises exceeding the limits specified in table 7 in EN60947-2:2003

(X) Rise in temperature of copper conductors were additionally determined by the change –of – resistance method, the temperature rise is calculated form:

$$T_2 = R_2/R_1 * (T_1 + 234.5) - 234.5$$

The sample operated under normal load as follows:

(x) Continuous operation until steady conditions were established.

() Rated intermittent operation of () on () off, until steady conditions were established.

The test conditions were as follows:

Maximum Normal Load; the temperature of ambient was 16 °C.

4.2 Test Result

OPERATING CONDITION	INPUT CONDITIONS		DURATION
	VOLTS	HZ	
Maximum Normal	~440V	50	4h

THERMOCOUPLE LOCATIONS	MAXIMUM TEMPERATURE-RISE (° C)	
	MEASURED	LIMITED
Wire terminal 1	62	80
Wire terminal 2	63	80
Wire terminal 3	61	80
Wire terminal 4	63	80
Wire terminal 5	62	80
Wire terminal 6	64	80
Wire terminal 7	62	80
Wire terminal 8	65	80
Wire terminal 9	61	80
Wire terminal 10	62	80
Wire terminal 11	62	80
Wire terminal 12	61	80
Handle	29	35

4.3 Verdict:

(x) Pass

() Fail

5 –TEST OF MECHANICAL STRENGTH OF TERMINALS

5.1 Test Method

Tests shall be made with the appropriate type of conductor having the maximum cross-sectional area. The conductor shall be connected and disconnected five times. For screw –type terminals, the tightening torque shall be in accordance with table 4 or 110% of the torque specified by the manufacturer, whichever is the greater.

The test shall be conducted on two separate clamping units. Each time the clamping screw or nut is loosened, a new conductor shall be used for each tightening test.

5.2 Test Result

(x) Clamping units and terminals shall not work loose during the test.

(x) Clamping units and terminals shall be damage during the test.

5.3 Verdict:

(x) Pass

() Fail

6 - CLEARANCE AND CREEPAGE DISTANCE CHECK TEST

6.1 Test Method

Clearance shall be sufficient to enable the equipment to withstand the rated impulse withstand voltage according to 7.2.3.1 in EN60947-1. For pollution degrees 1 and 2, creepage distances shall be not less than the associated clearances selected according to 7.2.3.3 in EN60947-1. For pollution 3 and 4, the creepage distance shall be not less than the case A clearances (table 13) to reduce the risk of disruptive discharge due to over voltages, even if the clearances are smaller than the values of case A as permitted in 7.2.3.3 in EN 60947-1.

The method of measuring clearances and creepage distances is given in annex G in EN 60947-1.

6.2 Test Result

Test Parameter	Test Component	Test Distance	Distance of Required	Test Result
Clearance	Pair of the terminals (in open position)	10mm	8mm	Pass
Clearance	pole and the others of terminals	11mm	8mm	Pass
Clearance	Between terminals and frame	11mm	8mm	Pass

Test Parameter	Test Component	Test Distance	Distance Of Required	Test Result
Creepage Distance	Pair of the terminals (in open position)	13mm	8mm	Pass
Creepage Distance	pole and the others of terminals	14mm	8mm	Pass
Creepage Distance	Between terminals and frame	13mm	8mm	Pass

6.3 Verdict:

(x) Pass

() Fail

7 – TEST OF RESISTANCE TO ABNORMAL HEAT AND FIRE

7.1 Test Method

Parts of insulating materials which might be exposed to thermal stresses due to electrical effects and the deterioration of which might impair the safety of the equipment shall not be adversely affected by abnormal heat and fire.

Tests on equipment shall be made by the glow-wire tests of IEC 60695-2-10, IEC 60695-2-11, IEC 60695-2-12 and IEC 60695-2-13.

Parts of insulating materials necessary to retain in position current-carrying parts of the main circuit in service shall conform to the glow-wire test of 8.2.1.1.1 of IEC 60947-1, at a temperature of 960°C.

Parts of insulating materials other than those specified in the previous paragraph shall conform to the requirements of the glow-wire tests of 8.2.1.1.1 of IEC 60947-1 at a temperature of 650°C

7.2 Test Result

Test Part	Glow-wire Temperature (°C)	Ignition Time(s)	Burning Time(s)	Tissue Paper Status
Retain plastic parts of current-carrying	960	30	0	No drops
The plastic enclosure	960	30	0	No drops
The handle	650	30	0	No drops

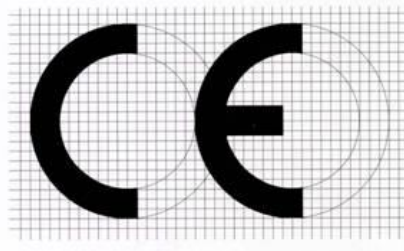
7.3 Verdict:

(x) Pass

() Fail

8 – PRODUCT LABELING

8.1 CE Mark Label Specification



Specifications: Text is Black or white in color and is left justified. Labels are printed in indelible ink on permanent adhesive backing or silk-screened onto the EUT or shall be affixed at a conspicuous location on the EUT.

8.2 Location of Label on EUT

EUT View / CE Marking Location



9 – EUT PHOTOGRAPHS

9.1 EUT Front View



Manufacturer/ Approval holder Declaration

The following identical models:

LW30 Series

belongs to the tested device:

Product description: **ROTARY SWITCH**
Model name: **LW30**

No additional models were tested.