

Test Report issued under the responsibility of:

## Test report IEC 61058-1-1 Switches for appliances Part 1: Requirements for mechanical switches

| Report reference No. $\qquad$ <br> Date of issue $\qquad$ <br> Total number of pages $\qquad$ | INST-4789563853-A-2 <br> 2020-12-11 <br> 9 PAGES OF REPORT AND 2 PAGES OF ANNEX |
| :---: | :---: |
| Name of Testing Laboratory preparing the Report. | Underwriters Laboratories Taiwan Co., Ltd |
| Applicant's name $\qquad$ <br> Address $\qquad$ | NINGBO HAISHU LIHE ELECTRONIC CO., LTD <br> No.228, Qiushi Road, Wangchun Industrial Zone, Haishu District, NINGBO ZHEJIANG 315177, CHINA |
| Test specification: <br> Standard $\qquad$ <br> Test procedure $\qquad$ <br> Non-standard test method. $\qquad$ | IEC 61058-1-1:2016 <br> CB Scheme <br> N/A |
| Test Report Form No. $\qquad$ <br> Test Report Form(s) Originator....: <br> Master TRF $\qquad$ | $\begin{aligned} & \text { IEC61058_1_1C } \\ & \text { Intertek Semko AB } \\ & 2019-05-23 \end{aligned}$ |
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| If this Test Report Form is used by no Scheme procedure shall be removed. This report is not valid as a CB Test appended to a CB Test Certificate is | n-IECEE members, the IECEE/IEC logo and the reference to the CB <br> Report unless signed by an approved CB Testing Laboratory and sued by an NCB in accordance with IECEE 02. |

General disclaimer:
The test results presented in this report relate only to the object tested.
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## List of Attachments:

- Photo - as required.
- National Differences.

| See test report: | INST-4789563853-A-1 | for IEC61058_1H |
| :--- | :--- | :--- |
| See test report: | N/A | for IEC61058_1H |

- Other attachments as needed. $\square$ Not included.Included. See Annex pages 1-2: endurance testing results.

See test report for IEC61058_1H for:

- Summary of testing.
- Tests performed (name of test and test clause).
- Testing location.
- Summary of compliance with National Differences (List of countries addressed).
- $\boxtimes$ The product fulfils the requirements of EN 61058-1-1:2016.
- Copy of marking plate.
- Test item particulars: $\quad$ See test report: $\operatorname{INST-4789563853-A-1} \quad$ for IEC61058_1H

Classification of installation and use.........................................................................
Supply Connection ..........
Supply Connection

Possible test case verdicts:

- test case does not apply to the test object............: N/A
- test object does meet the requirement...................: Pass (P)
- test object does not meet the requirement............: Fail (F)

Testing:
Date of receipt of test item
2020-10-08
Date(s) of performance of test
2020-10-08 ~ 2020-11-24

## General remarks:

"(See Enclosure \#)" refers to additional information appended to the report.
"(See appended table)" refers to a table appended to the report.
Throughout this report a $\square$ comma / $\boxtimes$ point is used as the decimal separator.

## Manufacturer's Declaration per sub-clause 4.2.5 of IECEE 02:

The application for obtaining a CB Test Certificate includes more than one factory location and a
$\square$ Yes declaration from the Manufacturer stating that the sample(s) submitted for evaluation is (are) representative of the products from each factory has been provided

When differences exist; they shall be identified in the General product information section.

| Name and address of factory (ies).................. : <br> See test report................................................... INST-4789563853-A-1 | for IEC61058_1H |
| :--- | :--- | :--- |
| General Product Information and other remarks .: <br> See test report............................................................ INST-4789563853-A-1 | for IEC61058_1H |


| IEC 61058-1-1 |  |  | Result - Remark |
| :--- | :--- | :--- | :---: |
| Clause | Requirement - Test | Verdict |  |
| $\mathbf{6}$ | RATING |  | P |
|  | This clause of part 1 is applicable. |  |  |
| $\mathbf{7}$ | CLASSIFICATION |  | P |
|  | This clause of part 1 is applicable. |  |  |
| $\mathbf{8}$ | MARKING AND DOCOMENTATION |  | P |
|  | This clause of part 1 is applicable. |  |  |


| 9 | PROTECTION AGAINST ELECTRIC SHOCK |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. | P |  |


| $\mathbf{1 0}$ | PROVISION FOR EARTHING |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. | P |  |


| 11 | TERMINALS AND TERMINATIONS |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. | P |  |


| 12 | CONSTRUCTION |  | P |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 13 | MECHANISM |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 14 | PROTECTION AGAINST SOLID FOREIGN OBJECTS, INGRESS OF WATER <br> AND HUMID CONDITIONS |  |
| :--- | :--- | :--- |
|  | This clause of part 1 is applicable. |  |


| 15 | INSULATION RESISTANCE AND DIELECTRIC STRENGTH |  | P |
| :---: | :---: | :---: | :---: |
|  | This clause of part 1 is applicable. |  |  |
| 16 | HEATING |  | P |
|  | This clause of part 1 is applicable. |  |  |


| $\mathbf{1 7}$ | ENDURANCE | P |  |
| :--- | :--- | :--- | :---: |
| $\mathbf{1 7 . 1}$ | General requirements |  |  |
| 17.1 .2 | The sequence of tests to be completed on the same 3 specimens is as follows: |  |  |
|  |  | Carried out: |  |
|  | - TC3: a test at high speed specified in 17.5.3 | $\square$ yes, $\boxtimes$ no | N/A |
|  | - TC2: a test at slow speed specified in 17.5.2 | $\boxtimes$ yes, $\square$ no | P |
|  | - TC1: an increased-voltage test at accelerated <br> speed as specified in 17.5.1 | $\boxtimes$ yes, $\square$ no | P |

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| IEC 61058-1-1 |  |  |  |
| :---: | :---: | :---: | :---: |
| Clause | Requirement - Test | Result - Remark | Verdict |
| $\begin{array}{\|l\|} \hline 17.4 \\ 17.4 .1 \end{array}$ | Actuating conditions <br> The operating speed for the operating cycles shall be as follows: <br> a) For very slow speed approximately: |  |  |
|  | $\square 1 \% \mathrm{~s}$ for rotary actuation; $\square 0.5 \mathrm{~mm} / \mathrm{s}$ for linear actuation. |  | N/A |
|  | b) For slow speed approximately: |  |  |
|  | $\square$ $9^{\circ} /$ s for rotary actuations at an angle $\leq 45^{\circ} ;$ $18^{\circ} / \mathrm{s}$ for rotary actuations at an angle $>45^{\circ}$;区 $20 \mathrm{~mm} / \mathrm{s}$ for linear actuations |  | P |
|  | c) For high speed: |  |  |
|  | - actuating member actuated by hand as fast as possible |  | N/A |
|  | d) For accelerated speed approximately: |  |  |
|  | $\square$ $45^{\circ} / \mathrm{s}$ for rotary actuations at an angle $\leq 45^{\circ}$; $90^{\circ} /$ s for rotary actuations at an angle $>45^{\circ}$;区 $80 \mathrm{~mm} / \mathrm{s}$ for linear actuations |  | P |
| 17.4.2 | For biased switches, the actuating member is moved to the limit of travel of the opposite position. |  | N/A |
| 17.4.3 | During the testing, care is taken that the test apparatus drives the actuating member, without impeding the designed movements of the switch. |  | P |
| 17.4.4 | During the accelerated speed test: |  |  |
|  | a) Care taken that test apparatus allows actuating member to operate freely. |  | P |
|  | b) Switches for a rotary actuation where movement is not limited in either direction: |  |  |
|  | - $3 / 4$ of operating cycles made in a clockwise and $1 / 4$ in an anti-clockwise direction |  | N/A |
|  | c) Switches for rotary actuation in one direction only test is performed in the designed direction. |  | N/A |
|  | d) Additional lubrication not applied during tests. |  | P |
|  | e) Forces applied to the end stops of the actuating members do not exceed declared values. |  | N/A |
| 17.4.5 | Switches are operated with the following conditions. Table 104: |  |  |
|  | $\square \mathrm{I}_{\mathrm{R}} \leq 10 \mathrm{~A} ;$ 1 (s) ON and 3 (s) OFF <br> R $>10 \mathrm{~A}$ but $<25 \mathrm{~A} ;$ <br> (s) ON and 6 (s) OFF  <br> $\mathrm{I}_{\mathrm{R}}$ is $\geq 25 \mathrm{~A} ;$ (s) ON and 12 (s) OFF  <br>  (s) |  | P |
|  | Capacitive and simulated lamp load (IEC 61058-1:2016, Figures 8 and 9); |  |  |
|  | - 2 (s) ON and 15 (s) OFF |  | N/A |
|  | Tungsten lamp loads: |  |  |
|  | - Minimum 1 (s) ON and Minimum 55 (s) OFF |  | N/A |
|  | Very slow speed TC10: |  |  |
|  | - Minimum 2 (s) ON and Minimum 6 (s) OFF |  | N/A |
|  | Locked rotor (TC9): |  |  |
|  | - 1 (s) ON and 30 (s) OFF |  | N/A |

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| IEC 61058-1-1 |  |  |  |  |
| :---: | :---: | :---: | :---: | :---: |
| Clause | Requirement - Test | Result - Remark |  | Verdict |
|  | Switches with test circuit as in Table 2 for codes 2.3, 2.5, 2.7 or 2.9: |  |  |  |
|  | - the ON periods is approximately $50 \%$ |  |  | N/A |
|  | Multi-way switches comply with the table 104 | (s) ON | (s) OFF | N/A |
|  | - or be actuated with the speed indicated in 17.4.1 and a minimum ON period of $25 \%$ |  |  | N/A |
| 17.5 | Type of test condition (TC) |  |  |  |
| 17.5.2 | Increased-voltage test at accelerated speed (TC1): |  |  |  |
|  | - Electrical conditions as in Table 102, 1.15 $\mathrm{U}_{\mathrm{n}}$ and 1.0 In . <br> - Capacitive and simulated lamp load $1.0 \mathrm{U}_{\mathrm{n}}$ and $1.15 \mathrm{I}_{\mathrm{n}}$. <br> - Thermal conditions $25 \pm 10^{\circ} \mathrm{C}$. <br> - Method of operation as in 17.4. <br> - 100 operating cycles. | See table TC. |  | P |
| 17.5.2 | Test at slow speed (TC2) |  |  |  |
|  | - Electrical conditions as in 17.2. <br> - Thermal conditions $25 \pm 10^{\circ} \mathrm{C}$. <br> - Actuating speed as in 17.4 slow speed. <br> - 100 operating cycles | See table TC. |  | P |
| 17.5.3 | Test at high speed (TC3) (only switches with more than one pole and with reversal polarity). |  |  |  |
|  | - Electrical conditions as in 17.2. <br> - Thermal conditions $25 \pm 10^{\circ} \mathrm{C}$. <br> - Actuating speed as in 17.4 high speed. <br> - 100 operating speed. | See table TC. |  | N/A |
| 17.5.4 | Test at accelerated speed (TC4) |  |  |  |
|  | - Electrical conditions as in 17.2. <br> - Thermal conditions as in 17.3. <br> - Actuating speed, accelerated as in 17.4. <br> - Operating cycles as number declared in (7.4) reduced with the number already tested in 17.5.1, 17.5.2 and 17.5.3. | See table TC. |  | P |
| 17.5.5 | Locked-rotor test (TC9): |  |  |  |
|  | - Electrical conditions as in 17.2. <br> - Thermal conditions $25 \pm 10^{\circ} \mathrm{C}$. <br> - Actuating speed, accelerated as in 17.4. <br> - 50 operating cycles. | See table TC. |  | N/A |
| 17.5.6 | Test at very slow speed (TC10): |  |  |  |
|  | - Electrical conditions as in 17.2. <br> - Thermal conditions $25 \pm 10^{\circ} \mathrm{C}$. <br> - Actuating speed, very slow speed in 17.4. <br> - 100 operating cycles. | See table TC. |  | N/A |
| 17.6 | Evaluation of compliance | See table TE1 - TE3. |  | P |


| 18 | MECHANICAL STRENGTH |  |  |
| :--- | :--- | :---: | :---: |
|  | This clause of part 1 is applicable. |  |  |

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| IEC 61058-1-1 |  |  | Result - Remark |
| :--- | :--- | :--- | :---: |
| Clause | Requirement - Test | Verdict |  |
| 19 SCREWS, CURRENT-CARRYING PARTS AND CONNECTIONS P  <br>  This clause of part 1 is applicable.   |  |  |  |


| 20 | CLEARANCES, CREEPAGE DISTANCES, SOLID INSULATION AND COATINGS <br> OF RIGID PRINTED BOARD ASSEMBLIES |  | P |
| :--- | :--- | :---: | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 21 | FIRE HAZARD |  | P |
| :--- | :--- | :---: | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 22 | Resistance to rusting |  | N/A |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 23 | ABNORMAL OPERATION AND FAULT CONDITIONS FOR ELECTRONIC <br> SWITCHES. |  | N/A |
| :--- | :--- | :--- | :---: |
|  | Mechanical switches with electronic components <br> checked by clause 23 of IEC 61058-1-2:2016. |  | N/A |
|  | Switches with rigid printed boards with creepage distances and clearances that do <br> not comply with the required distances of Table 12 to Table 14 of IEC 61058-1:2016: |  |  |
|  | - checked by Clause 23 of IEC 61058-1-2:2016 |  | N/A |


| 24 | COMPONENTS |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. |  |  |


| 25 | EMC REQUIREMENTS |  |  |
| :--- | :--- | :--- | :---: |
|  | This clause of part 1 is applicable. |  |  |



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