



# IP67耐候性防水ボックス WPシリーズ

## IP67 試験成績証明書

### 試験成績証明書 説明事項

1. 本成績書は、型番WP20-28-7GのIP67試験成績証明書となります。  
高さ違いの WP20-28-5G と IP67防水ボックス WP20-28-5C, WP20-28-7C につきましても  
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2023年3月31日

株式会社タカチ電機工業 開発部

E-mail : tec@takachi-el.co.jp

# TEST CERTIFICATE

We, hereby, verify that the under mentioned electrical product submitted to test at our laboratory dated January 24,2020 (Reception No. D19Y0573 ) is in compliance with the requirement of the test standard to be applied, as shown in the attached TEST REPORT (Ref. No. 19TR-Y1118 )

Applicant (name & address): TAKACHI ELECTRONICS ENCLOSURE CO., LTD.

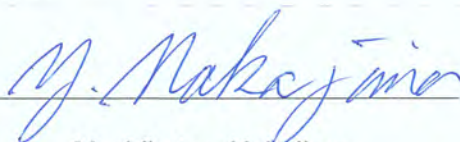
3-21-16, HIGASHI-RYOKE, KAWAGUCHI-SHI, SAITAMA,  
JAPAN(332-0003)

Name of product: IP67 UV-PROTECT NETWORK PLASTIC BOX

Model/Type Ref.: WP20-28-7□

Rating and principal characteristics: —

Date of issue: February 27,2020



Yoshikatsu Nakajima  
Director, Yokohama Laboratories  
Japan Electrical Safety &  
Environment  
Technology Laboratories (JET)

# TEST REPORT

Report reference No. 19TR-Y1118

Date & No. of reception January 24, 2020 (D19Y0573)

Applicant (Name&address)

TAKACHI ELECTRONICS ENCLOSURE CO., LTD.

3-21-16, HIGASHI-RYOKE, KAWAGUCHI-SHI, SAITAMA,  
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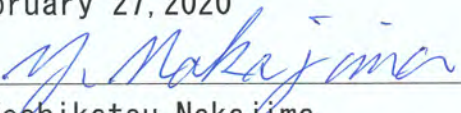
Rating and principal characteristics

—

Test Standard JIS C 0920:2003 (IEC 60529:2001)  
Degrees of protection provided by enclosures  
(IP Code) , requested by the applicant

Test Result Pass

Date of issue February 27, 2020

  
Yoshikatsu Nakajima

Director, Yokohama Laboratory

Japan Electrical Safety & Environment  
Technology Laboratories (JET)

Testing laboratory

Japan Electrical Safety & Environment Technology Laboratories

- ☐ JET Tokyo Laboratory  
5-14-12 Yoyogi, Shibuya-ku, Tokyo, 151-8545, Japan
- ☒ JET Yokohama Laboratory  
1-12-30 Motomiya, Tsurumi-ku, Yokohama, Kanagawa, 230-0004, Japan
- ☐ JET Kansai Laboratory  
4-1 Koyo-cho Nishi, Higashinada-ku, Kobe, Hyogo, 658-0033, Japan
- ☐ JET Power Technology Testing Laboratory  
1-12-28 Motomiya, Tsurumi-ku, Yokohama, Kanagawa, 230-0004, Japan

Date of Sample recieved      January 24, 2020

Date of test      February 5, 2020      until      February 26, 2020

Tested by (+ signature)      Kazuya Nemoto  
Kazuya Nemoto

Approved by (+ signature)      Makoto Kanazawa  
Makoto Kanazawa

Test case verdicts

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

P(ass) : Test item does meet the requirement.

F(ail) : Test item does not meet the requirement.

— Test item not applied. (according to request from the applicant)

General remarks

- 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 JET.



| JIS C 0920 (2003) / IEC 60529 (2001) |                                                                                                                                                    |                                                                                                                   |          |
|--------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------|----------|
| Clause                               | Requirement – Test                                                                                                                                 | Result - Remark                                                                                                   | Verdict  |
| 11                                   | <b>General requirements for the tests</b>                                                                                                          |                                                                                                                   | <i>P</i> |
| 11.1                                 | Atmospheric conditions for water or dust tests :                                                                                                   |                                                                                                                   | <i>P</i> |
|                                      | Temperature range: 15~35 °C                                                                                                                        | Temperature for water test<br>18 °C<br>Temperature for dust test<br>17 °C                                         | <i>P</i> |
|                                      | Relative humidity: 25~75 %                                                                                                                         | Relative humidity for water test<br>51 %<br>Relative humidity for dust test<br>27 %                               | <i>P</i> |
|                                      | Air pressure: 86~106 kPa                                                                                                                           | Air pressure for water test<br>102.5 kPa<br>Air pressure for dust test<br>101.8 kPa                               | <i>P</i> |
| 11.2                                 | Test samples for each test                                                                                                                         |                                                                                                                   | <i>P</i> |
|                                      | - in a clean and new condition                                                                                                                     | New condition                                                                                                     | <i>P</i> |
|                                      | - the complete equipment                                                                                                                           | Complete equipment                                                                                                | <i>P</i> |
|                                      | - representative parts                                                                                                                             |                                                                                                                   | <i>N</i> |
|                                      | - smaller equipment having the same full-scale design                                                                                              |                                                                                                                   | <i>N</i> |
|                                      | Number of samples to be tested                                                                                                                     | 2 sets<br>Test for protection against solid foreign object<br>1 set<br>Test for protection against water<br>1 set | <i>P</i> |
|                                      | Conditions for mounting, assembling and positioning of samples                                                                                     |                                                                                                                   | <i>N</i> |
|                                      | Pre-conditioning                                                                                                                                   | The sample for dust test was set with pipe for depression                                                         | <i>P</i> |
|                                      | Whether to be tested energized or not                                                                                                              | Not energized                                                                                                     | <i>P</i> |
|                                      | Whether to be tested with its parts in motion or not                                                                                               | Not in motion                                                                                                     | <i>P</i> |
| 11.3                                 | Application of test requirements and interpretation of test results                                                                                | No drain holes and no ventilation openings                                                                        | <i>P</i> |
|                                      | Standard applied for the general requirements for tests and the acceptance conditions for equipment containing drain-holes or ventilation openings |                                                                                                                   | <i>N</i> |
|                                      | Standard applied for the interpretation of test results                                                                                            | This standard                                                                                                     | <i>P</i> |
| 11.4                                 | Combination of test conditions for the first characteristic numeral: Table V applied                                                               | The first characteristic numeral 6                                                                                | <i>P</i> |
| 11.5                                 | Empty enclosures                                                                                                                                   |                                                                                                                   | <i>P</i> |
|                                      | Whether the enclosure to be tested is with or without equipment inside                                                                             | Without equipment inside                                                                                          | <i>P</i> |

| JIS C 0920 (2003) / IEC 60529 (2001) |                                                                                                                                                                                                         |                                                                                                                                                |          |
|--------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|----------|
| Clause                               | Requirement – Test                                                                                                                                                                                      | Result - Remark                                                                                                                                | Verdict  |
| <b>12</b>                            | <b>Tests for protection against access to hazardous parts indicated by the first characteristic numeral</b>                                                                                             |                                                                                                                                                | —        |
| <b>13</b>                            | <b>Tests for protection against solid foreign objects indicated by the first characteristic numeral</b>                                                                                                 |                                                                                                                                                | <i>P</i> |
| 13.1                                 | Test means                                                                                                                                                                                              |                                                                                                                                                | <i>P</i> |
|                                      | The test means and the main test conditions applied as in Table VII                                                                                                                                     | First characteristic numeral 6<br>Dust chamber<br>With underpressure                                                                           | <i>P</i> |
| 13.2                                 | Test conditions for first characteristic numerals 1, 2, 3, 4                                                                                                                                            |                                                                                                                                                | —        |
| 13.3                                 | Acceptance conditions for first characteristic numerals 1, 2, 3, 4                                                                                                                                      |                                                                                                                                                | —        |
| 13.4                                 | Dust test for characteristic numerals 5 and 6                                                                                                                                                           |                                                                                                                                                | <i>P</i> |
|                                      | Use of dust chamber in Fig. 2                                                                                                                                                                           | Dust chamber                                                                                                                                   | <i>P</i> |
| 13.4A                                | Category 1 enclosures                                                                                                                                                                                   |                                                                                                                                                | <i>P</i> |
|                                      | - 2 hours (extraction rate: 40~60 volumes per hour)                                                                                                                                                     |                                                                                                                                                | <i>N</i> |
|                                      | - until 80 volumes have been through or continued for a period of 8 hours                                                                                                                               | 8 hours<br>(Extraction rate from the enclosures were less than 40 times the volumes of the enclosure per hour with maximum depression of 2kPa) | <i>P</i> |
| 13.4B                                | Category 2 enclosures                                                                                                                                                                                   |                                                                                                                                                | <i>N</i> |
| 13.4C                                | Category 1 enclosures and Category 2 enclosures                                                                                                                                                         | The sample was complete equipment                                                                                                              | <i>P</i> |
|                                      | If it is impracticable to test the complete enclosure in the test chamber, one of the following procedure shall be applied:                                                                             |                                                                                                                                                | <i>N</i> |
|                                      | - Testing of individually enclosed sections of the enclosure                                                                                                                                            |                                                                                                                                                | <i>N</i> |
|                                      | - Testing of representative parts of the enclosure, in position during test (The volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale) |                                                                                                                                                | <i>N</i> |
|                                      | - Testing of a smaller enclosure having the same full-scale design details (The volume of air to be drawn through the enclosure under test shall be the same as for the whole enclosure in full scale)  |                                                                                                                                                | <i>N</i> |
| 13.5                                 | Special conditions for first characteristic numeral 5                                                                                                                                                   |                                                                                                                                                | —        |



## JIS C 0920 (2003) / IEC 60529 (2001)

| Clause    | Requirement – Test                                                                                     | Result - Remark                                                                  | Verdict |
|-----------|--------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------|---------|
| 13.6      | Special conditions for first characteristic numeral 6                                                  |                                                                                  | P       |
| 13.6.1    | Test conditions                                                                                        |                                                                                  | P       |
|           | Category 1 applied                                                                                     | Category 1                                                                       | P       |
| 13.6.2    | Acceptance conditions                                                                                  |                                                                                  | P       |
|           | No deposit of dust is observable inside the enclosure at the end of the test                           | No talcum powder entered the sample                                              | P       |
| <b>14</b> | <b>Tests for protection against water indicated by the second characteristic numeral</b>               |                                                                                  | P       |
| 14.1      | Test means                                                                                             |                                                                                  | P       |
|           | The test means and the main test conditions applied as in Table VIII                                   | Immersion tank (water-level:1000mm)                                              | P       |
| 14.2      | Test conditions                                                                                        | The second characteristic numeral 7                                              | P       |
|           | Tests performed according to sub-cl. 14.2, the test method and main test which was given in Table VIII | Test conditions are given in Table VIII                                          | P       |
|           | Difference between water temperature and temperature of the specimen (the maximum 5 K)                 | Difference: 0 K<br>Water temperature: 18 °C<br>Sample temperature: 18 °C         | P       |
|           | Calculation of the enclosure surface area                                                              | Not more than 1.0 m <sup>2</sup>                                                 | P       |
| 14.2.1    | Test for second characteristic numeral 1 with the drip box                                             |                                                                                  | —       |
| 14.2.2    | Test for second characteristic numeral 2 with drip box                                                 |                                                                                  | —       |
| 14.2.3    | Test for second characteristic numeral 3 with oscillating tube or spray nozzle                         |                                                                                  | —       |
| 14.2.4    | Test for second characteristic numeral 4 with oscillating tube or spray nozzle                         |                                                                                  | —       |
| 14.2.5    | Test for second characteristic numeral 5 with 6.3 mm nozzle                                            |                                                                                  | —       |
| 14.2.6    | Test for second characteristic numeral 6 with 12.5 mm nozzle                                           |                                                                                  | —       |
| 14.2.7    | Test for second characteristic numeral 7: temporary immersion between 0.15 m and 1 m                   |                                                                                  | P       |
|           | a) The lowest point is located 1000 mm from the surface of the water                                   | The lowest point of the sample was located 1000 mm from the surface of the water | P       |
|           | b) The highest point is 150 mm to the surface of the water (enclosure with height $\geq$ 850 mm)       |                                                                                  | N       |
|           | c) The duration of the test: 30 min                                                                    | 30 min                                                                           | P       |
|           | d) Difference between the water temp. and the temp. of the equipment: $\leq$ 5 K                       | Difference: 0 K<br>Water temperature: 18 °C<br>Sample temperature: 18 °C         | P       |
| 14.2.8    | Test for second characteristic numeral 8: continuous immersion subject to agreement                    |                                                                                  | —       |

## JIS C 0920 (2003) / IEC 60529 (2001)

| Clause    | Requirement – Test                                                                               | Result - Remark                  | Verdict  |
|-----------|--------------------------------------------------------------------------------------------------|----------------------------------|----------|
| 14.3      | Acceptance conditions                                                                            |                                  | <i>P</i> |
|           | Acceptance conditions applied as specified in :                                                  |                                  | <i>P</i> |
|           | - sub-clause 14.3                                                                                | sub-clause 14.3                  | <i>P</i> |
|           | - the relevant product standard                                                                  |                                  | <i>N</i> |
|           | Whether or not any water has entered                                                             | No water entered the test sample | <i>P</i> |
|           | If any water has entered, it is proved by inspection that any water which enters:                |                                  | <i>N</i> |
| <b>15</b> | <b>Tests for protection against access to hazardous parts indicated by the additional letter</b> |                                  | —        |



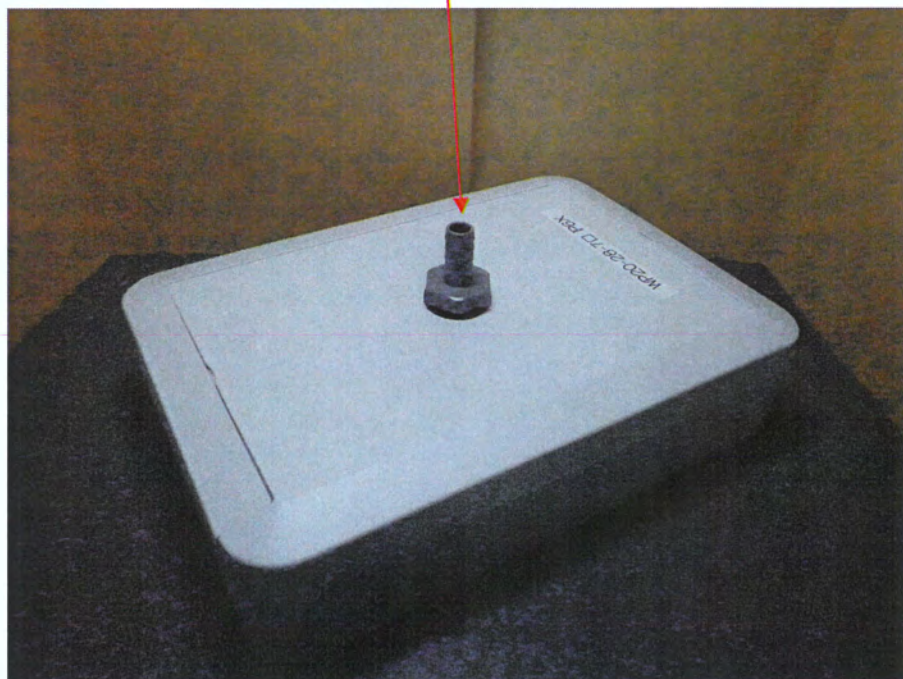
**Photo**

**The external view of the test samples, for water test**



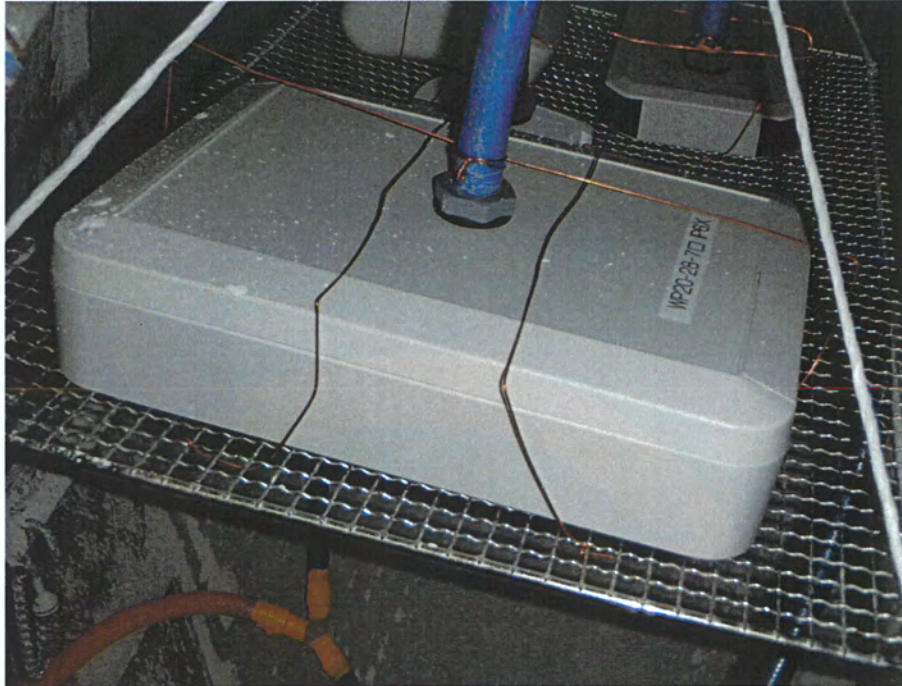
**The external view of the test samples, for dust test**

Pipe for depression



## Test of the First Characteristic Numeral 6

Before Dust Test



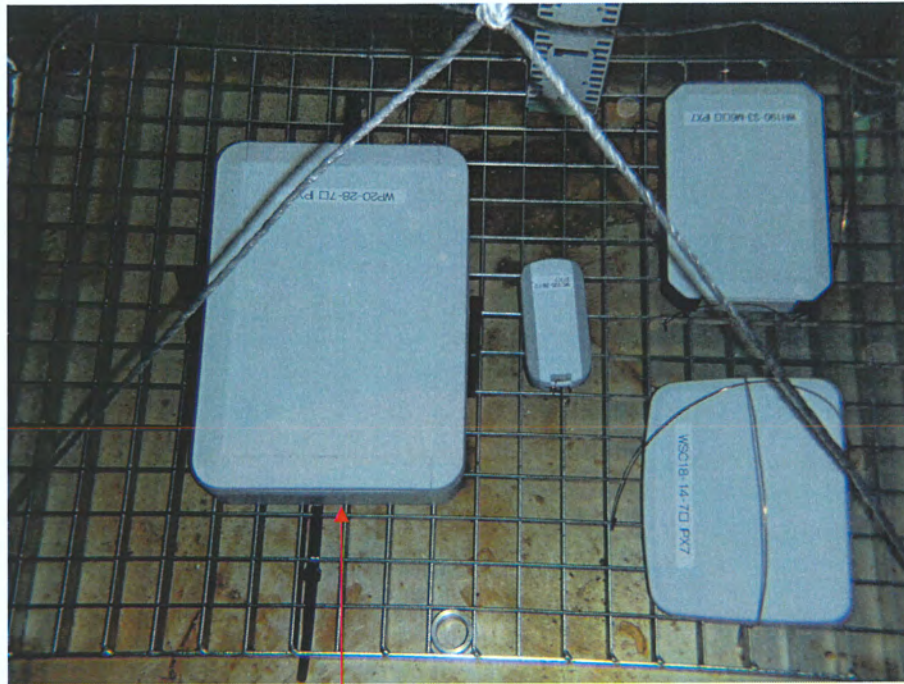
After Dust Test





## Test of the Second Characteristic Numeral 7

Situation in the immersion tank



The test sample