IP67 TEST REPORT

Name and address of Applicant:	Techniqua Handels GmbH Reichenhaller Straße 15 D-83451 Piding
Name and address of Manufacturer:	Techniqua Handels GmbH Reichenhaller Straße 15 D-83451 Piding
Test Item Description:	Nylon Heat Shrink Terminal
Trademark:	TECH-MASTERS
Sample Model No.:	Crimp & Seal Connector (clear (0.5), red (1.25), blue (2), yellow (5.5))
Sample Quantity:	10 units/each
Sample Receiving Date:	2020-01-02
Testing Period:	2020-01-03 to 2020-01-04
Test Requested:	Test for Degrees of Protection Provided by Enclosures (EN 60529:1991/A2:2013/AC:2019)

IP Code	IP67
First characteristic numeral	Degrees of protection against access to hazardous parts and against solid foreign objects
Second characteristic numeral	Degrees of protection against ingress of water

Test Results: The submitted sample(s) comply with the requirement and acceptance condition of EN 60529:1991/A2:2013/AC:2019 Degrees of Protection Provided by Enclosures – IP67. The detailed test result, please see next pages.

Other Information:
1. The result relates only to the items tested.
2. The selected test items were as the request by applicant.
3. Samples were tested as received.

For and on behalf of
Hwatest Compliance Services Co., Ltd.

Steve Kowal

2020-01-06
Date

Steve Kowal / Asst. Manager
Name/Position

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1. General Information

1.1 Description of Sample

Sample Name: Crimp & Seal Connector
Model: clear (0.5), red (1.25), blue (2), yellow (5.5)
Manufacturer: Techniqua Handels GmbH
Test Sample Quantity: As table below

Sample ID	Sample Quantity
Crimp & Seal Connector (Yellow)	1 unit
Crimp & Seal Connector (Blue)	1 unit
Crimp & Seal Connector (Red)	1 unit
Crimp & Seal Connector (Clear)	1 unit

The sample cover the following models: Crimp & Seal Connector clear 0.5, Crimp & Seal Connector red 1.25, Crimp & Seal Connector blue 2 and Crimp & Seal Connector yellow 5.5. All models have same construction.
Test sample was taken randomly from the sample submitted by the applicant.

1.2 Sample Status/Operation Condition

The sample was not damaged, fully assembled with wire according to the manufacturer's instruction. Hot melt adhesive provides dust-proof and waterproof property. The sample is not in electrical operation.

2. Dust-tight Test (IP6X)

2.1 Test Equipment

Name	Brand	Model
1.0mm Test Wire Probe	ED&D	TRP-02
Digital Force Gauge	ALGOL	HG-50
Dust Chamber	T-MACHINE	TMJ-9723C

2.2 Laboratory Ambient Condition

Temperature: 25°C ± 3°C
Relative Humidity: 55% ± 20% (RH)

2.3 Reference Document

This test method refers to EN 60529:1991/A2:2013/AC:2019 – Degrees of protection provided by enclosures, IP6X dust test protected.

2.4 Test Parameters

a) Test for protection against access to hazardous parts

Test means : The test wire with 1.0 mm in diameter and 100 mm long is pushed against or inserted through any openings of the enclosure with designated force.
Examine whether the test wire touches the hazardous live parts inside the enclosure or not.

Test Force : 1 N ± 10%

b) Test for protection against solid foreign objects

Enclosure Category : Cat. 2 (Enclosure where no pressure difference relative to the surrounding air is present.)

Sample condition : The sample was not damaged, fully assembled with wire according to the manufacturer's instruction. Hot melt adhesive provides dust-tight and waterproof property.

Test means : Temperature stabilized surroundings

Dust Material: : Talcum powder (100% dry fine)

Particle Size	Amount (%)
< 5 μm (Diameter)	42.3% ± 5
5~10 μm (Diameter)	35.85% ± 5
10~20 μm (Diameter)	21.15 % ± 5
20~40 μm (Diameter)	0.69% ± 5
> 40 μm (Diameter)	0%

Amount of Talcum Powder : 2 kg/m^3 (chamber volume)

Dust Density : 2.03 g/cm^3

Air Pressure : 1022 mbar

Air Direction : Vertically to achieve slowest possible downward settlement

Duration : 8 hours

2.5 Acceptance conditions for first characteristic number 6

The test wire of 1.0 mm in diameter shall not penetrate and adequate clearance shall be kept;
The protection is satisfactory if no deposit of dust is observable inside the enclosure at the end of the test.

2.6 Test Results

After test, visual inspection showed no dust particle permeated into the sample.
The sample passed the IP6X dust-tight test.

Check Item			Check Result
a)	Test for protection against access to hazardous parts		
	1	Does the test wire penetrate any openings of the enclosure?	No
	2	(followed check item 1) If the test wire penetrates any openings of the enclosure, does the test wire touch any hazardous live parts or any hazardous mechanical parts?	N/A
	3	(followed check item 2) Does adequate clearance be kept between the test wire and hazardous live parts or hazardous mechanical parts?	N/A
b)	Does any dust deposit inside the enclosure at the end of the test?		No
Note 1: N/A means “Not Applicable” Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in EN 60529:1991/A2:2013 /AC:2019 and in accordance with the acceptance conditions specified by applicant.			

3. Immersion Water Test (IPX7)

3.1 Test Equipment

Name	Brand	Model
Water Immersion Tank	HAIDA	HD-E710-4

3.2 Laboratory Ambient Condition

Temperature: 25°C ± 3°C
Relative Humidity: 55% ± 20% (RH)

3.3 Reference Document

This test method refers to EN 60529:1991/A2:2013/AC:2019 – Degrees of protection provided by enclosures, IPX7 immersion water test.

3.4 Test Parameters

Test Means	:	Completely immerse the sample in water in its service position as specified by applicant.
Sample Condition	:	The sample was not damaged, fully assembled with wire according to the manufacturer's instruction. Hot melt adhesive provides dust-tight and waterproof property. The sample is not in electrical operation.
Test Condition:	:	☒ The lowest point of enclosure with a height less than 850mm is located 1000mm below the surface of the water; ☐ The highest point of enclosure with a height equal to or greater than 850 mm is located 150mm below the surface of the water.
Test Duration	:	30 minutes

3.5 Acceptance conditions for second characteristic number 7

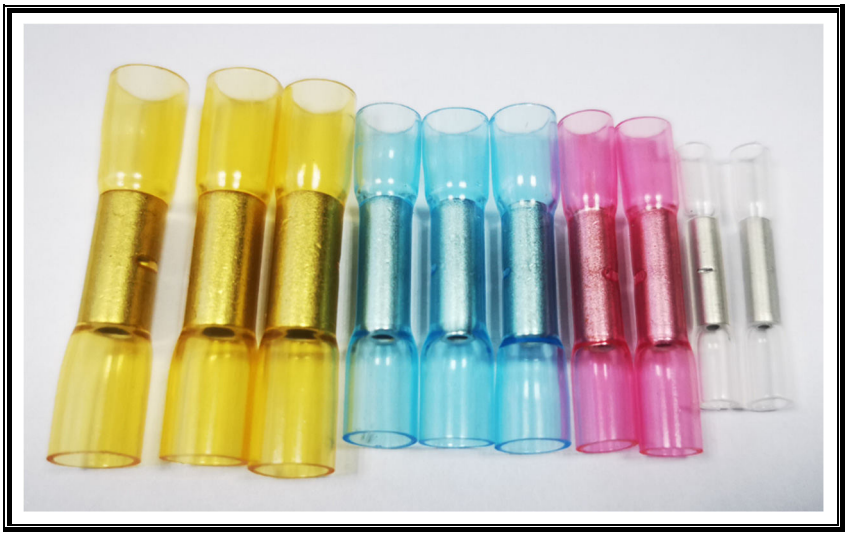
In general, if any water has entered, it shall not be sufficient to interfere with the correct operation of the equipment or impair safety.

3.6 Test Results

After test, visual inspection showed no water permeated into the sample.
The sample passed the IPX7 immersion water test.

Check Item		Check Result
1	Does any water enter the enclosure?	No
2	(followed check item 1) If any water has entered, does the water accumulate near the cable end or live parts?	N/A
2.1	(followed check item 2) Does the water be sufficient to interfere with the correct operation of the equipment or impair safety?	N/A
2.2	(followed check item 2.1) Does the water deposit on insulation parts where it could lead to tracking along the creepage distance?	N/A
2.3	(followed check item 2.2) Does the water reach live parts or windings not designed to operate when wet?	N/A
Note 1: N/A means “Not Applicable” Note 2: The check items in this test report for inspecting the degree of protection provided by enclosures are reference to the requirements specified in EN 60529:1991/A2:2013 /AC:2019 and in accordance with the acceptance conditions specified by applicant.		

4. Photograph(s) of Sample:



*** End of Report ***