

TEST REPORT

IPX9 test of Heat Lamp

BPN Holding, Tarm ApS

Report no.: 122-26911-1

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1 appendix

OVERVIEW

Title	IPX9 test of Lamp
Test object	1 pcs. Part no. BNP.5652-070 Detailed information is given in Section 2. The test object was received 1 September 2022
Task no.	122-26911
Report no.	122-26911 -1
Test date	1 September 2020
Client	BPN Holding, Tarm ApS Hybenvej 15 6880 Tarm Denmark Phone: +4521707676
Contact person	Per Nielsen birgit.damholt@mail.dk Phone: +4521707676
Results	No malfunctions were detected. No water inside object observed.
Revisions	Initial version
Test site	Nordborgvej 81, L7-S14, 6430 Nordborg, Denmark
Test personnel	Klaus Madsen
Date	8 September 2022
Responsible	Klaus Madsen
	Klaus Madsen

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1 Summary of test

1.1 Test requirements

The following tests were carried out as agreed with the client.

Test	Test method
Enclosure protection, IPX9	EN 60529-A2:2013
Insulation test	Carried out at 500 VDC before and within 30 min after water exposure

The test results relate only to the objects tested.

1.2 Test sequence

1. Prepare units
2. Insulation test (500VDC)
3. IPX9 Exposure
4. Insulation test (500DC)
5. Visual inspection
6. Report

1.3 Test conclusion

The test was performed as specified. The visual inspection showed no ingress of water inside test object.

The acceptance criteria for the test is stated in section 4.1.

2 Test objects

Name of test object	Heat Lamp
Model / type	BNP.5652-070
Manufacturer	BNP Holding, Tarm Aps



Photo 1 Test object BNP.5652-070

3 General test conditions

3.1 Standard environment

Normal environmental condition:

Temperature	:	15 °C - 35 °C
Humidity	:	25 %RH - 75 %RH
Air pressure	:	86 kPa - 106 kPa (860 mbar - 1060 mbar)
Power supply voltage	:	N/A

4 Test and results

4.1 Enclosure protection, IPX9

Test specification and method

IEC 60529:2013 Degrees of protection provided by enclosures (IP Code).

Severity

IP X9: (Protection against high pressure and temperature water jetting)

Procedure	: Large enclosure, largest dimension greater than 250 mm.
Water pressure	: minimum 0.9 – 1.2 N
Water temperature	: 80 °C
Distance from nozzle to object	: 150 - 200 mm
Test duration	: 1 min per m ² , 3 min. minimum.

Procedure

The test object is de-energised during the exposure.

The test object is subjected to the high-pressure jets for the specified duration from all practical directions.

After the test, the test object is wiped off on all external surfaces, and an internal visual inspection is performed.

Acceptance condition for second characteristic number 9

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

4.1.1 Test Results

The test was performed as specified. The visual inspection showed no ingress of water inside the test object.



Photo 2 Enclosure protection, IP X9. Test setup



Photo 3 Enclosure protection, IPX9. Exposure.



Photo 4 Enclosure protection, IPX9. top side exposure.



Photo 5 Enclosure protection, IPX9. Base cable inlet exposure.

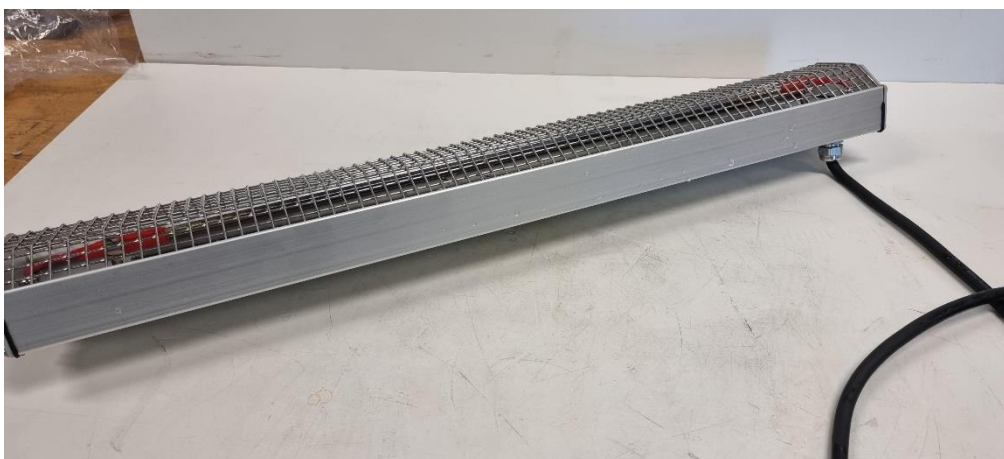


Photo 6 After IPX9.

4.1.2 Visual inspection

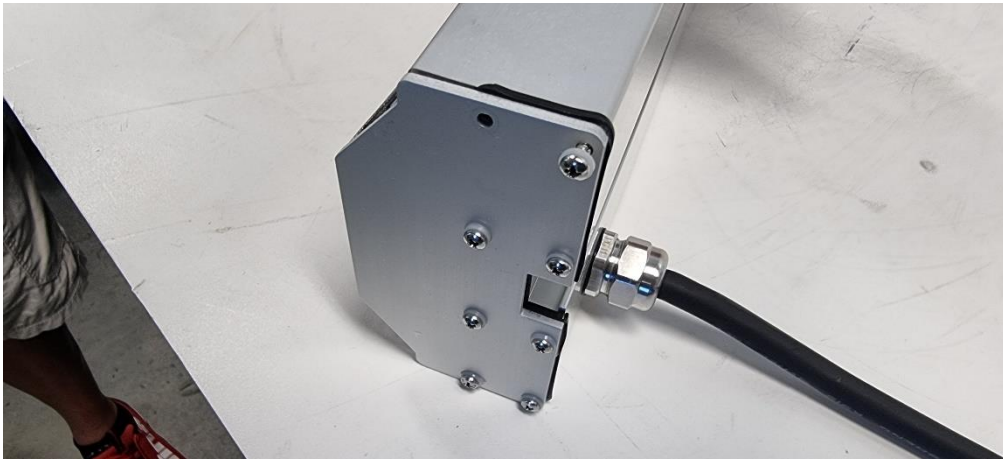


Photo 7 After IPX9. Endplate -



Photo 8 After IPX9. No water observed behind screw.

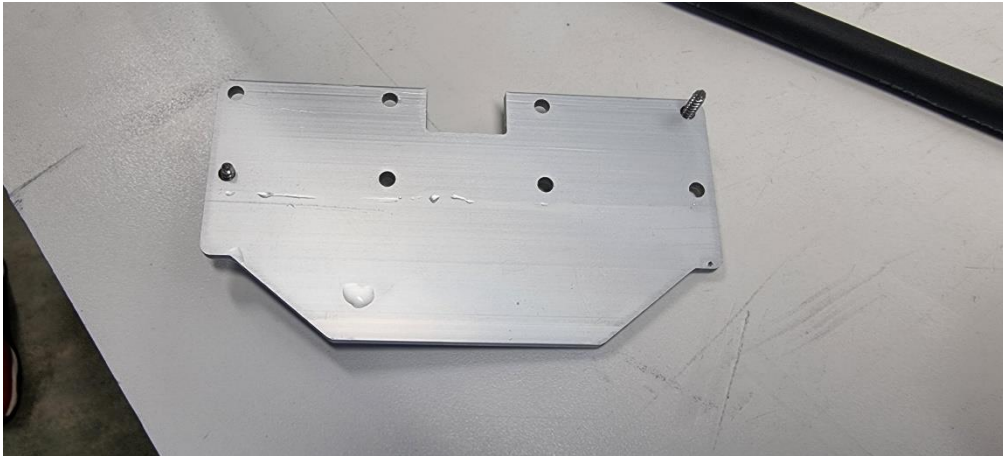


Photo 9 After IPX9. Water only observed outside enclosure



Photo 10 After IPX9. No water observed around sealing

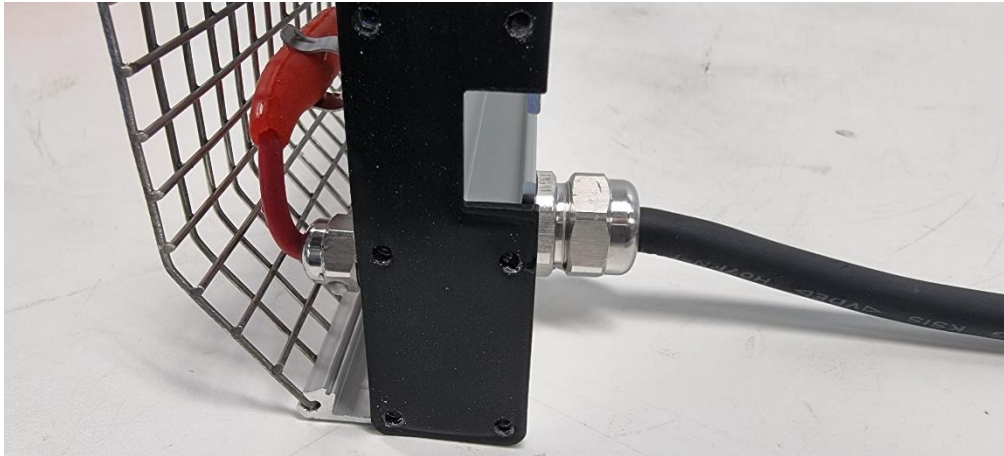


Photo 11 After IPX9. Visual inspection around cable plug



Photo 12 After IPX9. No water observed inside object

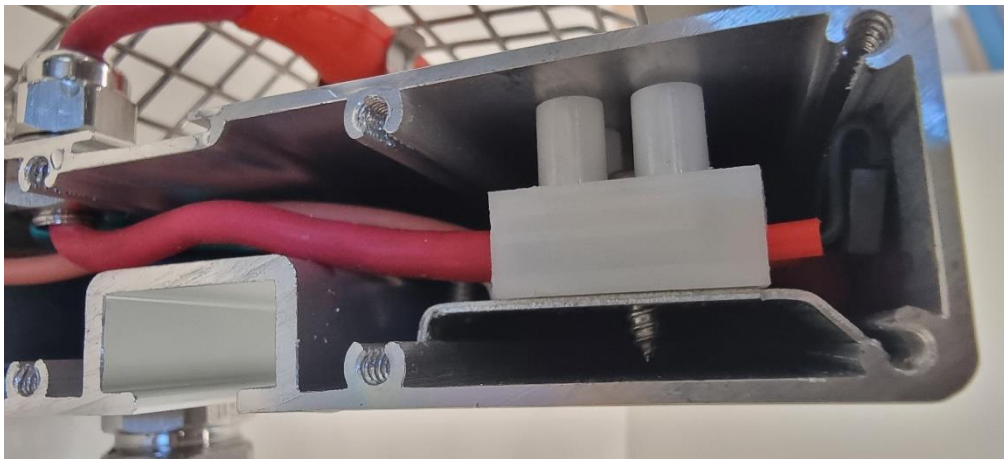


Photo 13 After IPX9. No water observed inside cable connector



Photo 14 After IPX9. Water observed outside enclosure

5 Insulation test

Acceptance condition for second characteristic number 9

In general, if any water has entered it shall not be sufficient to interfere with the correct operation of the equipment or impair safety. The acceptance low limit for the insulation test is 10 M Ω .

Table 1. Result of insulation test before and after initial IP X9 exposure.

Results of IP X9 test					
Test date: 2022-09-01					
Code no	ID no.	Insulation res. 100Vdc		Remarks	Final analysis
		Before - R	After - R		
		[G Ω]	[G Ω]		
BNP.5652-70	1	125	22		OK

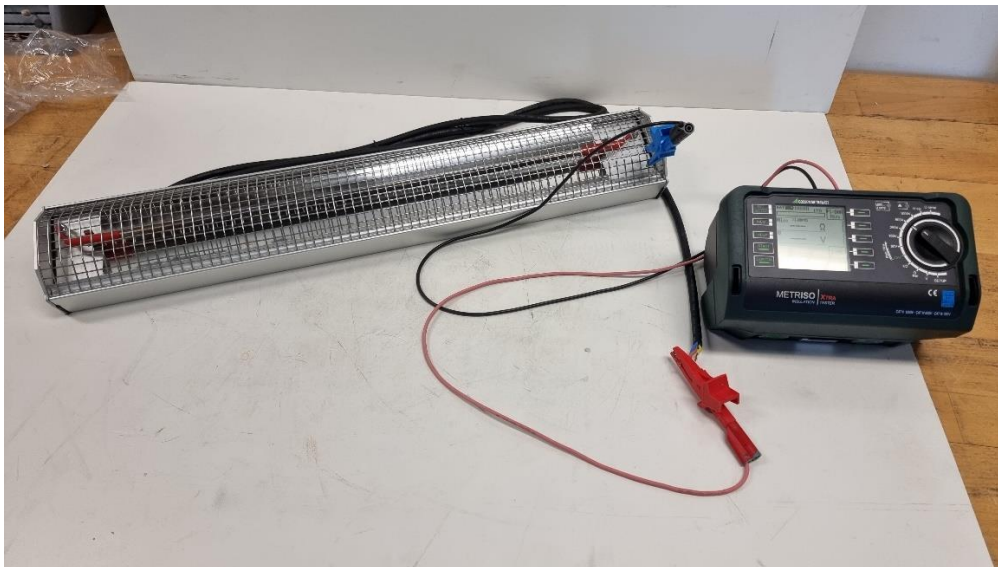


Photo 15 Insulation test before IPX9. – Result 125 G-ohm

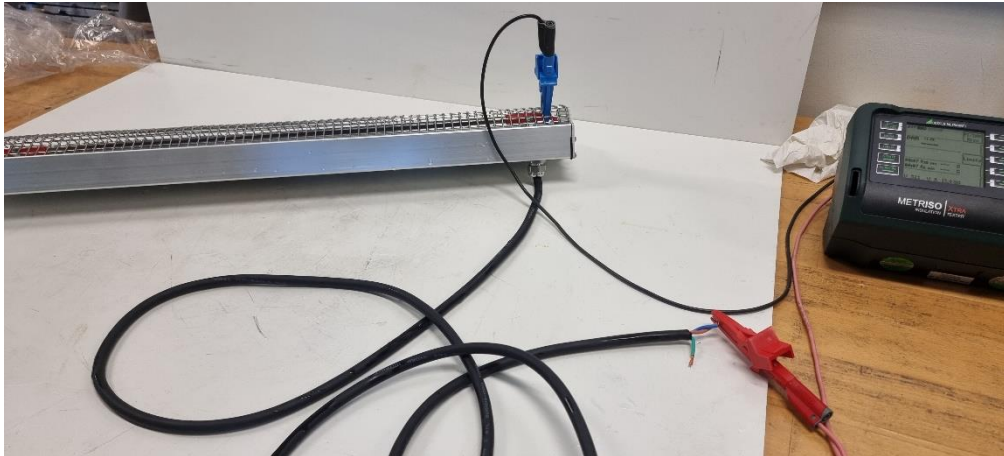


Photo 16 *Insulation test after IPX9. – Result 22 G-ohm*

APPENDIX

Appendix 1 List of instruments

NO.	DESCRIPTION	MANUFACTURER	TYPE NO.
S00020	Tape Measure	Hultafors	3 meter
S00021	Hanhart Mesotron quartz stopwatch	05-04-2019	Trescal
S00097	Termometer	Testo	925
S00102	Termo-Hygrometer	Rotronic	Hygropalm 3
S00106	Pressure Transmitter	Danfoss	0-1bar
S00150	Lodsæt Instron 1kg-1g	Ohaus	1kg-1g
S00434	High pressure cleaner, 500 bar	Kent Højtryk A/S	KE500-15
S00435	HotBox	Kent Højtryk A/S	HotBox 500 bar
S00499	Kraftmåler IPX9		

Appendix 2 Test with $\varnothing 1.0\text{mm}$ test wire and finger test



Photo 17 $\varnothing 1.0\text{ mm}$ test wire



Photo 18 $\varnothing 1.0\text{ mm}$ test wire



Photo 19 \varnothing 1.0 mm test wire

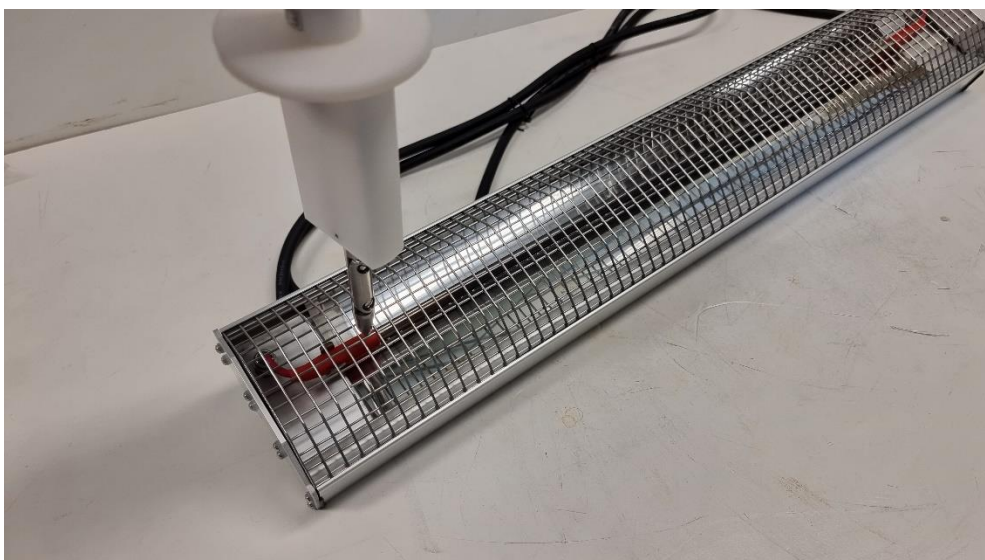


Photo 20 Finger test



Photo 21 Finger test

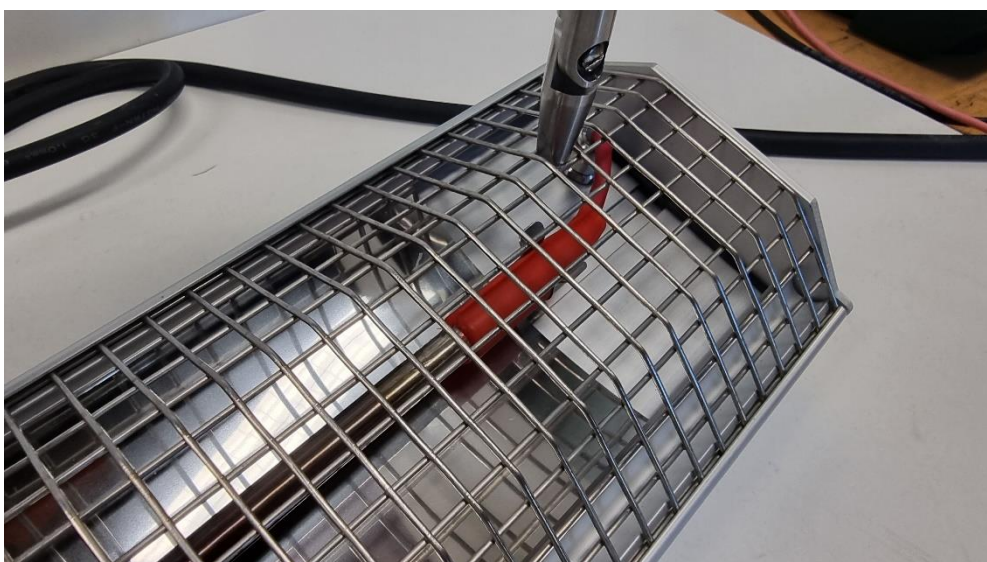


Photo 22 Finger test