

TEST REPORT

IP66 test of type A cabinet

C P In Stainless ApS

Report no.: 124-26183-1

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1 appendix



Task manager

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OVERVIEW

Title	IP66 test of type A cabinet
Test objects	2 pcs. type A cabinets, version 600 x 600 x 220 mm Detailed information is given in Section 2 The test objects were received 19 September 2024
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Client	C P In Stainless ApS Dalvangen 1 9800 Hjørring DENMARK Tel.: +45 60 86 28 81
Contact person	Casper Petersen cp@cpsm.dk
Manufacturer	C P In Stainless ApS
Specifications	IEC 60529:2013 Edition 2.2 "Degrees of protection provided by enclosures (IP Code)"
Results	See Section 1, Summary of test and Section 4, results.
Revisions	Initial version
Test site	Venlighedsvej 4, 2970 Hørsholm, Denmark
Test personnel	Jakob Heidicke Kristian Kolbye Jensen

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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
Dust protection, IP6X	IEC 60529:2013
Enclosure protection, IPX6	IEC 60529:2013

The test results relate only to the objects tested.

1.2 Introduction

Tightness tests have been performed on 2 pcs. type A cabinets in order to evaluate the degree of protection against dust and water provided by the enclosure.

One type A cabinet was tested for ingress of dust according to IEC 60529:2013 Edition 2.2, IP6X. The test was performed as Category 1.

The type A cabinet was tested for penetration according to IEC 60529:2013 Edition 2.2, IP6X. The test wire of 1.0 mm is pushed against or inserted through any openings of the enclosure with the specified force.

One type A cabinet was tested for ingress of water according to IEC 60529:2013 Edition 2.2, IPX6.

The test results relate to the tested objects only.

The test objects were not energised during exposures.

1.3 Conclusion

The visual inspection performed after the IP6X test revealed no dust inside the enclosure. Furthermore, the probe could not enter the enclosure, and clearance was kept to any hazardous parts. For detailed test results, see Section 4.1.

The visual inspection performed after the IPX6 test revealed no water inside the enclosure. For detailed test results, see Section 4.2.

2 Test objects

2.1 Test object

Name of test object	Cabinet
Model / type	Type A
Version	600 x 600 x 220 mm
Serial no.	N/A, marked DUT 1 (IP6X) and DUT 2 (IPX6)
Manufacturer	C P In Stainless ApS
Supply voltage	N/A
Comments	-



Photo 1 Test object.

3 General test conditions

3.1 Test setup

Photos of the test setup are shown in Section 4.

3.2 Visual inspection

A visual inspection was carried out by FORCE Technology after each test. The inspection included opening the test object and looking for ingress of dust and water.

3.3 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	:	$U_{nom.} \pm 3 \%$

4 Test and results

4.1 Dust protection, IP6X

Test specification and Test method

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

Severity

IP6X (dust-tight):

Category	:	1 (air pressure reduction)
Dust medium	:	Talcum
Air pressure	:	2 kPa (20 mbar) below normal air pressure
Duration	:	8 h

Procedure

The test object is de-energised during the exposure.

The test object is placed inside the dust test chamber in an upright position as would be expected during normal use. Hereafter, it is exposed to swirling dust conditions as described in the reference specification.

After the exposure, the test object is brushed down on all external surfaces. It is then carefully opened and visually inspected for ingress of dust. Special attention is paid to dust accumulated on parts critical to the functionality of the test object.

Acceptance condition for first characteristic number 6

The protection is satisfactory if, on inspection, no ingress of dust is observed.

Results

The test was performed as specified. A visual inspection showed that there was no ingress of dust inside the enclosure. Furthermore, an \varnothing 1.0 mm test wire could not enter through any holes or openings, and adequate clearance was kept between the test wire and hazardous parts.



Photo 2 Before exposure, IP6X.



Photo 3 After exposure, IP6X.



Photo 4 Visual inspection, IP6X. No ingress of dust observed.



Photo 5 Visual inspection, IP6X. No ingress of dust observed.



Photo 6 Visual inspection, IP6X. No ingress of dust observed.



Photo 7 Visual inspection, IP6X. No ingress of dust observed.



Photo 8 Enclosure protection, IP6X. 1 mm probe – Adequate clearance kept.



Photo 9 Enclosure protection, IP6X. 1 mm probe – Adequate clearance kept.

4.2 Enclosure protection, IPX6

Test specification and Test method

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

Severity

IPX6 (Protection against water jets from all directions):

Internal diameter of the nozzle	:	12.5 mm
Intensity	:	100 l/min
Test duration	:	1 min per m ² , 3 min minimum, 36 s in five directions
Distance from nozzle to object	:	2.5 to 3 m

Procedure

The test object is de-energised during the exposure.

The test object is subjected to the specified flow of water 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 6

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

Results

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



Photo 10 During exposure, IPX6. Side 1.



Photo 11 During exposure, IPX6. Side 2.



Photo 12 During exposure, IPX6. Side 3.



Photo 13 During exposure, IPX6. Side 4.



Photo 14 During exposure, IPX6. Top.



Photo 15 Visual inspection, IPX6. No ingress of water observed.



Photo 16 Visual inspection, IPX6. No ingress of water observed.



Photo 17 Visual inspection, IPX6. No ingress of water observed.

APPENDIX

Appendix 1 List of instruments

NO.	DESCRIPTION	MANUFACTURER	TYPE NO.
43301	Measuring tape	Stanley	5m / 300-696
EVFGT-34	Wet Room	DELTA	IP Water
43276	IP nozzle (IPX6)	AWG	N/A
43280	Flow Instrument	Eberhardt/IOSIL	MS 501-T20-1A1A1A
43239	IP Probe test kit	ED&D	A,B,C,D,E,F,G
EVFGT-49	IP Dust	Weiss Technik	ST 20000
43298	Leakage tester	Wöhler	LT 600
43299	Thermometer	Elma	712
43327	Humidity Logger	Elma	DT-172