





# TEST REPORT

 <p><b>CTK Co., Ltd.</b> The Power Leader of Global Republics Certification</p>	<p><b>CTK Co., Ltd.</b> (Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF Tel: +82-31-339-9970 Fax: +82-31-624-9501</p>	<p>REPORT No.: CTK-2024-01782 Page (1) / (20) pages</p>	
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<p><b>1. Applicant</b></p> <p>Name .....: Hanwha Vision Co., Ltd</p> <p>Address .....: 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA</p> <p>Date of Receipt .....: 2024-05-03</p>		
<p><b>2. Manufacturer</b></p> <p>Name / Address .....: Same as applicant</p>		
<p><b>3. Use of Report</b> .....: Quality control</p>		
<p><b>4. Test sample / Model</b> .....: CABINET/ SBP-150NBW</p>		
<p><b>5. Date(s) of test</b> .....: 2024-05-03 ~ 2024-06-14</p>		
<p><b>6. Test Standard (Method) used</b> ..: NEMA 250-2018 / Type 4X</p>		
<p><b>7. Testing Environment</b> .....: Temperature: (25.0 ± 15.0) °C</p>		
<p><b>8. Test Results</b> .....: Reference test results</p>		
<p><b>9. Location of Test</b> .....: <input checked="" type="checkbox"/> Permanent Testing Lab <input type="checkbox"/> On Site Testing (Address : 142, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea)</p>		
<p>The results shown in this test report refer only to the sample(s) tested unless otherwise stated. This report cannot be reproduced or copied without the written consent of CTK</p>		
<p>Approval</p>	<p>Tested by : JaeYoon Sim  (Signature)</p>	<p>Technical Manager: HyunSeob Lim  (Signature)</p>
		<p>2024-06-21</p>
		<p><b>CTK Co., Ltd.</b></p>
		

**CTK Co., Ltd.**

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**Test item description**..... : CABINET**Trade Mark**..... :**Manufacturer** ..... : Hanwha Vision Co., Ltd

6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-  
 do, 13488 KOREA

**Model/Type reference**..... : SBP-150NBW**Ratings**..... : W \* D \* H = 360 mm \* 420 mm \* 163 mm**List of Attachments (including a total number of pages in each attachment):**

Attachment 1: 11 pages (Construction Diagram including installation method)

Attachment 2: 12-14 pages (Parts List)

Attachment 3: 15-19 pages (photographs)

**Summary of testing:****Tests performed (name of test and test clause):****Clause 5.7(Hose Down Test)****Testing location:**

CTK Co., Ltd.

142, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-  
 do, Republic of Korea

**Clause 5.9(Outdoor Corrosion Protection)**

(Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi  
 Gyeonggi-do , REPUBLIC OF KOREA

**Copy of marking plate: The artwork above may be only a draft.****SBP – 150NBW****CABINET**

8 8 0 1 0 8 9 2 2 3 0 4 3

**M/C : SBP – 150NBW/VEX****S/N : ZTMA6V4X400001T****FW****MAC. - - - - -****MADE IN VIETNAM****PAT. <https://www.hanwhavision.com/patent/>**

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**Test item particulars**..... : CABINET**Classification of installation and use** ..... : Outdoor**Possible test case verdicts:**

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

**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  comma /  point is used as the decimal separator.

Clause numbers between brackets refer to clauses in NEMA 250-2018

**Name and address of factory (ies):**

Same as applicant

**General product information:**

Applied NEMA Rating : 4X

Model SBP-150NBW is basic model which was tested.

**Type 4X**

Enclosures constructed for either indoor or outdoor use to provide a degree of protection to personnel against access to hazardous parts; to provide a degree of protection of the equipment inside the enclosure against ingress of solid foreign objects (falling dirt and windblown dust); to provide a degree of protection with respect to harmful effects on the equipment due to the ingress of water (rain, sleet, snow, splashing water, and hose directed water); that provides an increased level of protection against corrosion; and that will be undamaged by the external formation of ice on the enclosure.



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**Table 2-1**  
**Comparison of Specific Applications of Enclosures for Indoor Nonhazardous (Unclassified) Locations**

Provides a Degree of Protection against the Following Conditions	Type of Enclosure									
	1	2	4	4X	5	6	6P	12	12K	13
Access to hazardous parts	X	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (falling dirt)	X	X	X	X	X	X	X	X	X	X
Ingress of water (dripping and light splashing)	...	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (circulating dust, lint, fibers, and flyings **)	...	...	X	X	...	X	X	X	X	X
Ingress of solid foreign objects (settling airborne dust, lint, fibers, and flyings **)	...	...	X	X	X	X	X	X	X	X
Ingress of water (hosedown and splashing water)	...	...	X	X	...	X	X	...	...	...
Oil and coolant seepage	...	...	...	...	...	...	...	X	X	X
Oil or coolant spraying and splashing	...	...	...	...	...	...	...	...	...	X
Corrosive agents	...	...	...	X	...	...	X	...	...	...
Ingress of water (occasional temporary submersion)	...	...	...	...	...	X	X	...	...	...
Ingress of water (occasional prolonged submersion)	...	...	...	...	...	...	X	...	...	...

\*\* These fibers and flyings are not considered Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or flyings see the *National Electrical Code*®, Article 500.5(D).

**Table 2-2**  
**Comparison of Specific Applications of Enclosures for Indoor & Outdoor Nonhazardous (Unclassified) Locations**

Provides a Degree of Protection Against the Following Conditions	Type of Enclosure									
	3	3X	3R	3RX	3S	3SX	4	4X	6	6P
Access to hazardous parts	X	X	X	X	X	X	X	X	X	X
Ingress of solid foreign objects (falling dirt)	X	X	X	X	X	X	X	X	X	X
Ingress of water (dripping and light splashing)	X	X	X	X	X	X	X	X	X	X
Ingress of water (rain, snow, and sleet **)	X	X	X	X	X	X	X	X	X	X
Sleet ***	...	...	...	...	X	X	...	...	...	...
Ingress of solid foreign objects (windblown dust, lint, fibers, and flyings****)	X	X	...	...	X	X	X	X	X	X
Ingress of water (hosedown and splashing water)	...	...	...	...	...	...	X	X	X	X
Corrosive agents	...	X	...	X	...	X	...	X	...	X
Ingress of water (occasional temporary submersion)	...	...	...	...	...	...	...	...	X	X
Ingress of water (occasional prolonged submersion)	...	...	...	...	...	...	...	...	...	X

\*\* External operating mechanisms are not required to be operable when the enclosure is ice covered.

\*\*\* External operating mechanisms are operable when the enclosure is ice covered. See subsection 5.6.

\*\*\*\* These fibers and flyings are not considered Class III type ignitable fibers or combustible flyings. For Class III type ignitable fibers or flyings see the *National Electrical Code*®, Article 500.5(D).



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**Table 5-1A  
 Degrees of Protection Against Access to Hazardous Parts**

Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP First Characteristic Numeral
		Brief Description	Definition	
4X	5.7	Protected against access to hazardous parts with a wire	An access probe of 1.0 mm shall not penetrate	6

**Table 5-1B  
 Degrees of Protection Against Solid Foreign Objects**


Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP First Characteristic Numeral
		Brief Description	Definition	
4X	<u>Non-vented</u> 5.7	Windblown dust protected	No ingress of dust	6
	<u>Vented</u> 5.5.1 Dust Blast Method			

**Table 5-1C  
 Degrees of Protection against Water**

Enclosure Type	Test Conditions	Degree of Protection		Corresponding IP Second Characteristic Numeral
		Brief Description	Definition	
4X	5.7	Protected against hose directed water	Water projected against the enclosure in any direction shall not enter	6 No Ingress Allowed*

**Table 5-1D  
 Additional Protection**

Enclosure Type	Test Conditions	Additional Protection		Corresponding IP Second Characteristic Numeral
		Brief Description	Definition	
4X	5.6 5.9 5.10	Special corrosion protection and undamaged by the external formation of ice	Enclosure provides increased corrosion protection and is not damaged by ice that forms on the outside	None


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<b>NEMA 250-2018</b>
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6Clause	Requirement + Tes18t	Result - Remark	Verdict
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<b>3</b>	<b>CONSTRUCTION</b>		<b>P</b>
3.1	General		P
3.2	Units of Measurement		P
3.3	Materials-General	Enclosures are made of metal or polymeric materials	P
3.4	Materials-Polymeric	Polymeric Materials used is declared as Min. V-2 Used to UL certified material. (See the attachment 2)	N/E
3.5	Corrosion Protection		P
3.6	Openings	No openings in Product	P
3.7	Mounting		N/A
3.8	Conduit Connection	No conduit connection (See the attachment 1)	N/A
3.9	Hubs and Fittings	No Hubs and Fittings	N/A
3.10	Knockouts		P
3.11	External Operating Mechanisms	No External Operating Mechanisms	N/A
3.12	Access to Interior	Needs tool to open unit	P
3.13	Closing Hardware	No closing Hardware	N/A
3.14	Gaskets	Gaskets made of a silicone Sponge Rubber (no Elastomeric or Thermoplastic used) (See clause 5.14 and the attachment 2)	N/E
3.15	Observation Windows	No Observation Window	N/A

<b>4</b>	<b>MARKING</b>		<b>P</b>
4.1	Type Designations	Type 4X Marking is declared to be on the product before on the market	P
4.2	Supplemental Markings	Supplemental Marking (watertight/ corrosion resistant) is declared to be used when it is on the market. The required marking shall be added on the product)	P
4.3	Location of Markings		P

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NEMA 250-2018			
6Clause	Requirement + Tes18t	Result - Remark	Verdict
4.4	Enclosure Orientation	No Particular Mounting Orientation	N/A
4.5	Conduit Hubs and Closure Plates	No Conduit Hubs and Closure Plates	N/A
4.6	Equipment Openings	No Openings on Unit	N/A
4.7	Drainage Openings	No Drain Openings	N/A

5	DESIGN TESTS		P
5.1	General	See Table 5-1A to 5-1D and 5.1.5 in the General product information	P
5.2	Tests For Protection Against Access to Hazardous Parts	Rated 4X	N/A
5.3	Tests for Protection Against Ingress of Water (Dripping and Light Splashing)	Rated 4X	N/A
5.4	Tests for Protection Against Ingress of Water (Rain)	Rated 4X	N/A
5.5	Tests for Protection Against Ingress of Solid Foreign Objects (Setting Airborne Dust, Lint, Fibers, And Flings)	Non-vented (See clause 5.7)	N/A
5.6	External Icing Test	No external cavities to trap water when mounted in the normal position.	N/A
5.7	Tests for Protection Against Ingress of Water (Hosedown)	No entry of water See the test information	P
5.8	Indoor Corrosion Protection (Rust-Resistance Test (24-Hour Salt Spray Test))	See clause 3.5	N/E
5.9	Outdoor Corrosion Protection	See clause 3.5	P
5.10	Corrosion Protection-Type 3X, 3RX, 3SX, 4X Or 6P Enclosures	Rated 2	N/A
5.11	Test for Protection Against Ingress of Water (Temporary Submersion)	Rated 4X	N/A
5.12	Test for Protection Against Ingress of Water (Prolonged Submersion)	Rated 4X	N/A
5.13	Oil Exclusion Test	Rated 4X	N/A
5.14	GASKET MATERIAL TESTS	The product itself(including gaskets) was conditioned at 70 °C for 168 hrs according to 5.14.3(Alternate Evaluation) before performing relevant required tests.	N/E

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NEMA 250-2018			
6Clause	Requirement + Tes18t	Result - Remark	Verdict
5.15	Test for Sharpness of Edges	No sharp edges	P



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## Test Information

	<b>Hose Down Test: Clause 5.7</b>				<b>P</b>
<p><b>Description of Test</b> The enclosure and its external mechanisms were subjected to a stream of water from a hose that has a 25.4 mm (1 in) inside diameter nozzle and delivers at least 240 L (65 gal) per minute. The nozzle was held from 3.0 to 3.5 m (10 to 12 feet) from the enclosure, and the spray of water was directed at all points of potential water entry such as seams, joints, external operating mechanisms, and such. The nozzle was moved along each test point one time at a uniform rate of 6 mm/sec(1/4 in/sec).</p> <p>Sample Dimension</p>					
Joint Description	Dimension	mm (inches)	No. of sides	Test length, mm(inches)	
[ ] At back of Enclosure	Width				
	Height				
[X] At Enclosure sides	Width	320	*2	640	
	Height	420	*2	840	
[X] Cover(s) / Door(s)	Width	187	*4	748	
	Height				
[] Window(s)	Width				
	Height				
[X] Locking(s), latch(s), handle(s)	Total	36	*1	36	
[ ] Mounting means with kit					
[ ] Round blind plug or other circular closure, please specify:	Circumference = Pi * diameter				
[ ] other equipment, please specify:					
(Note: Expand table as needed.)					
Total test length, mm ( <del>inches</del> )				2 264	
Test time [ <del>minutes</del> ] [seconds]: 388 (Total test length in mm) / (6 mm/s) = test time in seconds (Total test length in mm) / (6 mm/s) / (60s/min) = test time in minutes					
<p><b>Acceptance conditions:</b> The enclosure shall be considered to have met the requirements if at the conclusion of the test no water has entered the enclosure</p>					
<b>Test Results</b>					
Sample No (Model)	Water Flow	Presence of water inside	Result		
SBP-150NBW	240 LPM	No	Pass		

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**List of test equipment used:**

Instr. Code	Instrument Type	Range Used	Mfr./Model	Calibration Date	
				Last	Due
S3-IP18	25.4mm Nozzle	25.4 mm	CTK/S3-IP18	-	Checked by calliper below before using
S3-IP23	Water flow meter	250LPM	Nuri tech/ Z-6504	2024.02.28	2025.02.28
C-S1-SW2	Stop Watch	0.01 s	CASIO / 612Q01R-1	2024.01.23	2026.01.23
S5-D02	Steel measuring meter	5 m	KOMELON / 190727	2024.02.19	2026.02.19



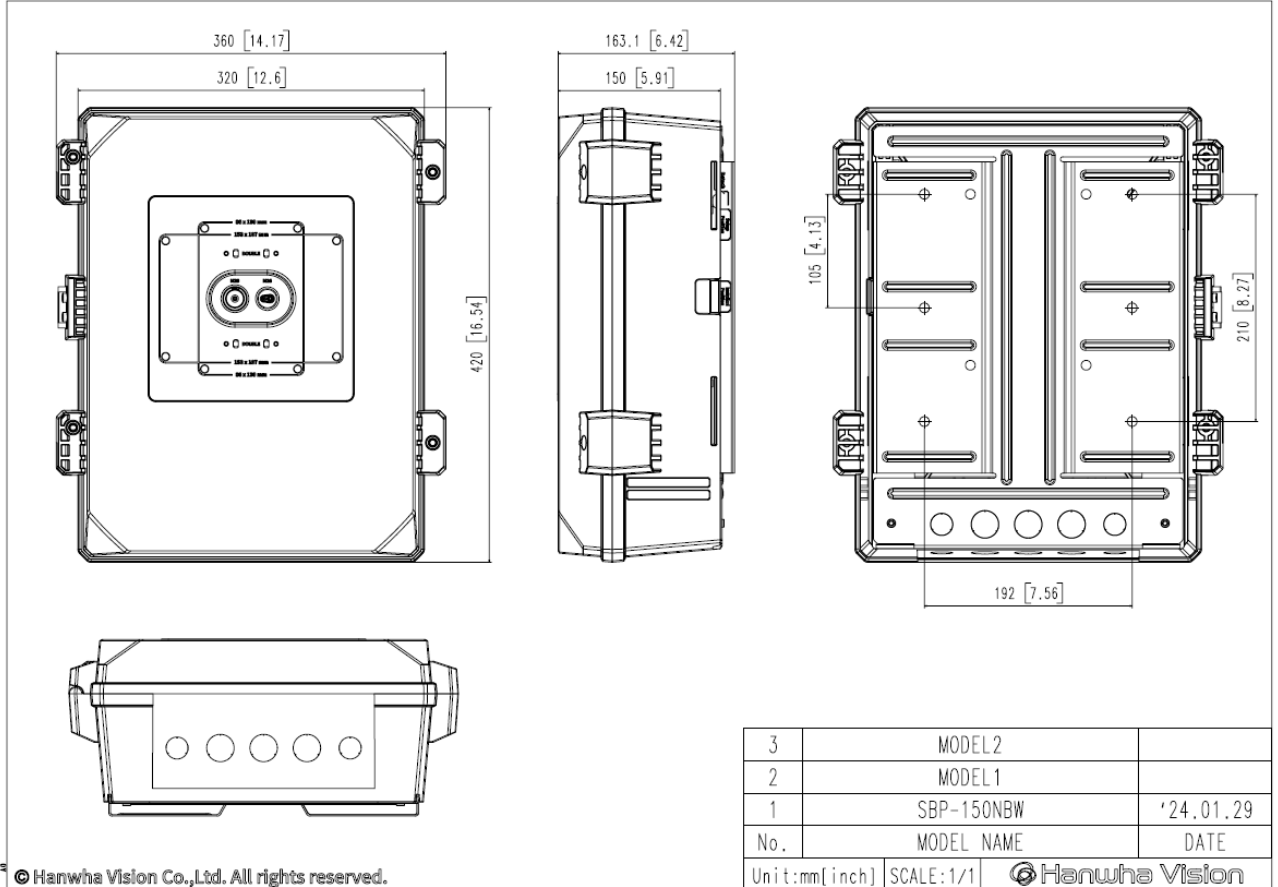
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**Attachment 1 – Construction Diagram and installation method**



3	MODEL 2	
2	MODEL 1	
1	SBP-150NBW	'24.01.29
No.	MODEL NAME	DATE
Unit:mm[inch]		SCALE:1/1
Hanwha Vision		

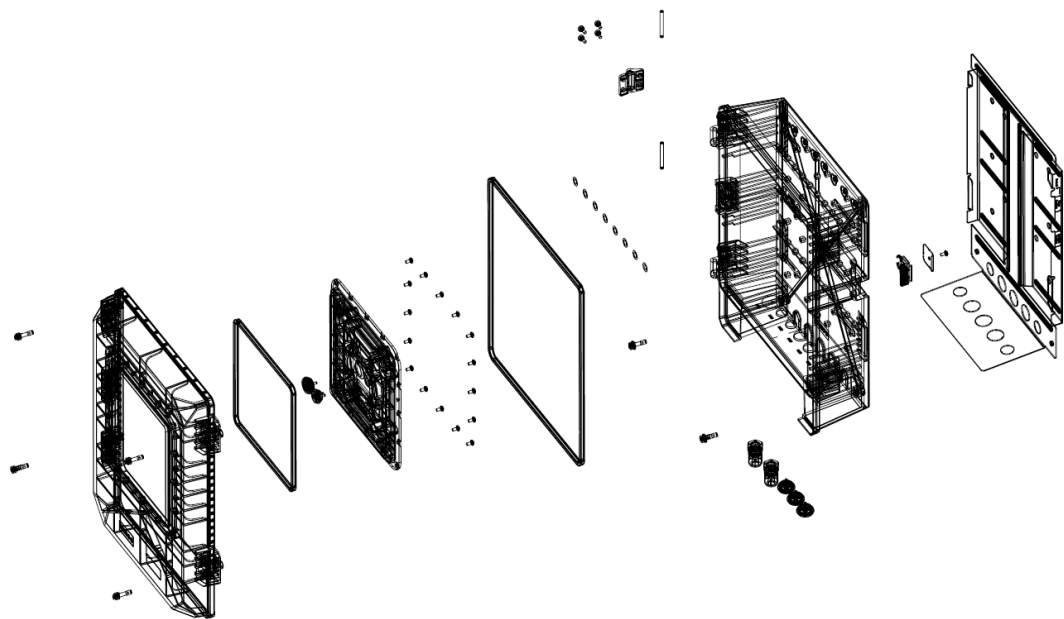
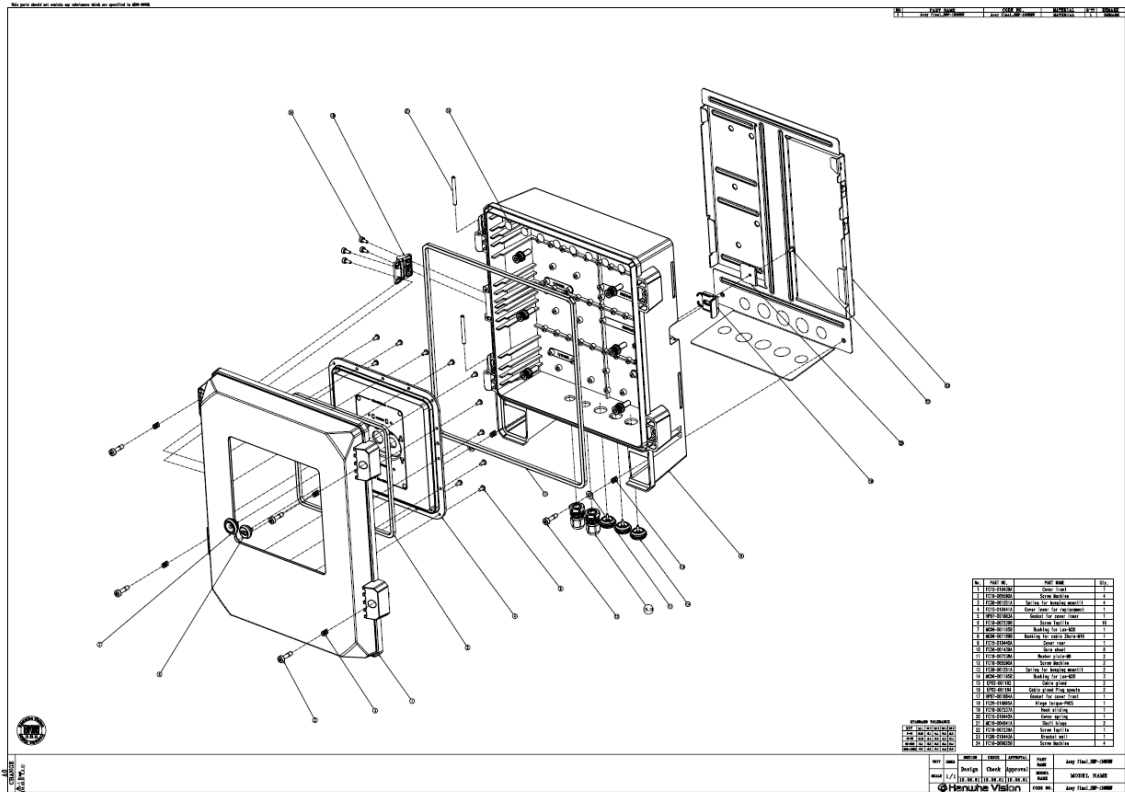
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**Attachment 1 – Construction Diagram and installation method**





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**Attachment 2 –Part List**

No.	품 번	품 명	규 격	물종	Qty
1	FC15-010439A	Cover front	PC EXL9334U + M4 insert 4ea	MD	1
2	FC18-005590A	Screw Machine	Built-in, Socket head, M6xL21.6, Torx30	SC	4
3	FC38-001251A	Spring for hanging mountit	SUS304WPB	ETC	4
4	FC15-010441A	Cover inner for replacement	ADC12 + 분체 WHT	DC	1
5	HP07-001883A	Gasket for cover inner	Silicone 30HsA, BLK	RB	1
6	FC18-007239B	Screw Taptite	BH, M4xL8, T20	SC	16
7	MC06-001195B	Bushing for Lan-M20	Silicone 50HsA, BLK	RB	1
8	MC06-001189B	Bushing for cable 2hole-M16	Silicone 50HsA, BLK	RB	1
9	FC15-010440A	Cover rear	PC EXL9334U + M4 insert 2ea & M6 insert 4ea	MD	1
10	FC36-001439A	Gore sheet	VE90814	TP	8
11	FC18-007238A	Washer plain-M6	SUS316L 1.5t	PD	2
12	FC18-005590A	Screw Machine	Built-in, Socket head, M6xL21.6, Torx30	SC	2
13	FC38-001251A	Spring for hanging mountit	SUS304WPB	ETC	2
14	MC06-001195B	Bushing for Lan-M20	Silicone 50HsA, BLK	RB	3
15	EP02-001182	Cable gland	WISKA ESKV-LT-SET 10066525 $\phi$ 4.5 ~ 10 (RAL7035)	ETC	2
16	EP02-001184	Cable gland Plug spouts	WISKA Plug BS10	ETC	2
17	HP07-001884A	Gasket for cover front	Silicone 30HsA, BLK	RB	1
18	FC29-016885A	Hinge torque-PHCS	PHCS81-0xx, SUS	ETC	1
19	FC18-007237A	Hook sliding	PC HN-1068 35505 B	MD	1
20	FC15-010442A	Cover spring	SUS304 1t	PD	1
21	MC19-004041A	Shaft hinge	SUS316L	ETC	2
22	FC18-007239A	Screw Taptite	BH, M4xL8, T20	SC	1
23	FC09-016443A	Bracket wall	SUS316L 1.5t	PD	1
24	FC18-006625B	Screw Machine	Socket head, M4xL8, T20	SC	4



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## Attachment 2 –Part List

 Component - Plastics Yellow Card™  
**ER016007(f1) , EXL9334U(f1)**

**SABIC JAPAN L L C**  
PACIFIC GRADES - RESIN  
2-2 KINUGAOKA  
MOKA-SHI, Tochigi 321-4392 Japan

File Number: E207780

### ELCRES: ER016007(f1) , EXL9334U(f1)

PC/Styrene, two liquid components

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.

NOTE - Material designation may be followed by a color nomenclature consisting of either an alpha/numeric or numeric/alpha combination.



Flammability	Value	Test Method
Flame Rating		UL 94
1.5 mm, ALL	V-0, 5VB	IEC 60695-11-10, -20
3.0 mm, ALL	V-0, 5VB	
Thermal	Value	Test Method
RTI Elec		UL 746B
1.5 mm	80.0 °C	
3.0 mm	80.0 °C	
RTI Imp		UL 746B
1.5 mm	80.0 °C	
3.0 mm	80.0 °C	
RTI Str		UL 746B
1.5 mm	80.0 °C	
3.0 mm	80.0 °C	
Physical	Value	Test Method
Outdoor Suitability	f1	UL 746C



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## Attachment 2 –Part List

 Component - Plastics  
**HN-1068(+)(f1)** **Yellow Card™**

**LOTTE CHEMICAL CORPORATION**  
56 GOSAN-RO  
UIWANG-SI, GYEONGGI-DO 16073 Republic of Korea

File Number: E115797

### INFINO: HN-1068(+)(f1)

Polycarbonate (PC), pellets

(+) - May be replaced by one, two, or three numbers and/or letter(s)

(f1) - Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.



Flammability	Value	Test Method
Flame Rating		UL 94
1,5 mm, ALL	V-0	IEC 60695-11-10, -20
3,0 mm, ALL	V-0	
Glow Wire Flammability Index		IEC 60695-3-12
1,5 mm	960 °C	
3,0 mm	960 °C	
Glow Wire Ignition Temperature		IEC 60695-3-13
1,5 mm	825 °C	
3,0 mm	825 °C	
Electrical	Value	Test Method
Hotwire Ignition (HWI) (1,5 mm)	PLC 3	UL 746A
High Amp Arc Ignition (HAI) (1,5 mm)	PLC 3	UL 746A
Comparative Tracking Index (CTI)	PLC 3	UL 746A
Dielectric Strength	32 kV/mm	ASTM D149
Volume Resistivity	1,0E+17 ohms*cm	ASTM D257 IEC 60093
Thermal	Value	Test Method
RTI Elec		UL 746B
1,5 mm	130 °C	
3,0 mm	130 °C	
RTI Imp		UL 746B
1,5 mm	130 °C	
3,0 mm	130 °C	
RTI Str		UL 746B
1,5 mm	130 °C	
3,0 mm	130 °C	
Ball Pressure Test (130°C)	Pass	IEC 60695-10-2
Physical	Value	Test Method
Outdoor Suitability	f1	UL 746C



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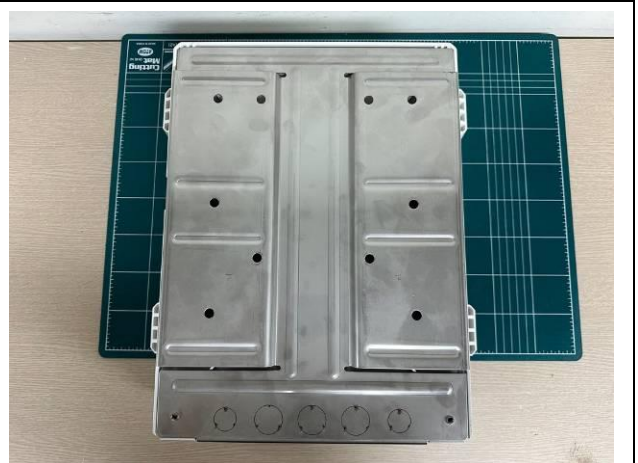
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**Attachment 3 –Photographs**

**<Photo 1 > Test Unit**



Top



Bottom



Front



Back



Left



Right





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**Attachment 3 –Photographs**

**<Photo 2 > Hose down test**



Hose down test



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**Attachment 3 –Photographs**

**<Photo 3 > Salt Spray test**



Salt Spray test



Salt Spray test

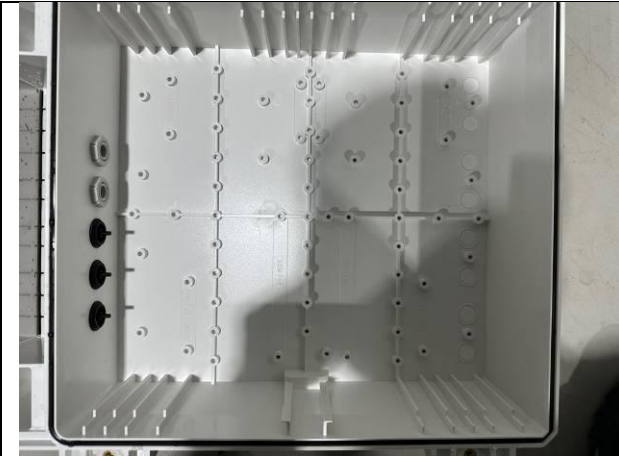


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**Attachment 3 –Photographs**

**<Photo 4 > Hose down test Result**



After test



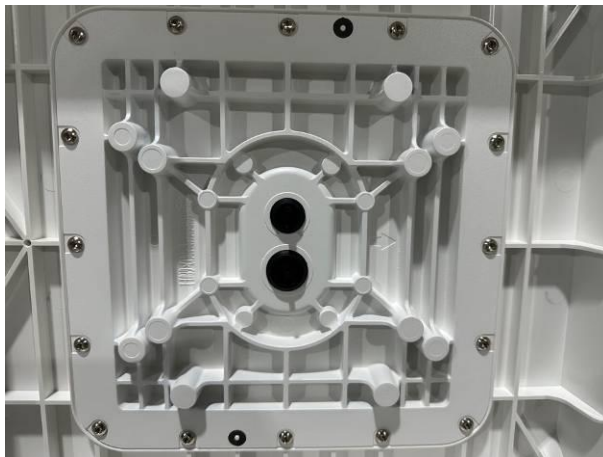
After test



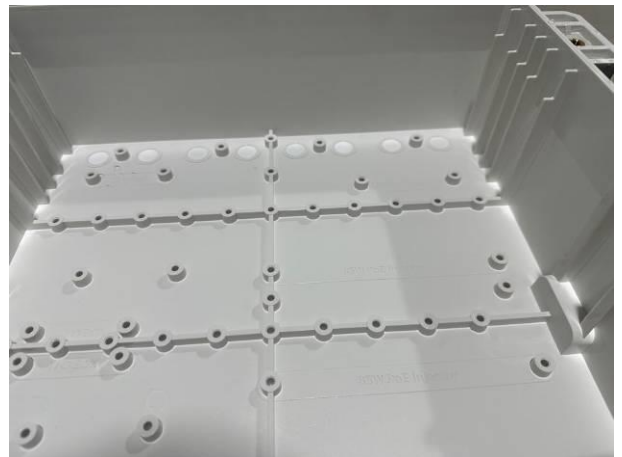
After test



After test



After test



After test



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**Attachment 3 –Photographs**

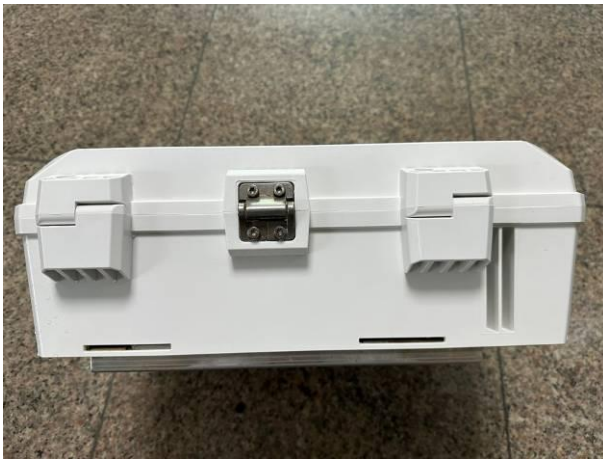
**<Photo 5 > Salt Spray test result**



After test



After test



After test



After test



After test



After test

**-END-**