

TEST REPORT

 CTK Co., Ltd. The Power Leader of Global Regulatory Certification	CTK Co., Ltd. (Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF Tel: +82-31-339-9970 Fax: +82-31-624-9501	REPORT No.: CTK-2021-02273 Page (1) / (19) pages	
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1. Applicant

- Name.....: Hanwha Techwin Co., Ltd.
- Address: Hanwha Techwin R&D center, 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si, Gyeonggi-do, 13488 KOREA
- Date of Receipt: 2020-09-15

2. Manufacturer

- Name.....: Hanwha Techwin Co., Ltd
- Address: Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam

3. Test sample / Model : NETWORK CAMERA / PNM-9022V

4. Date(s) of test : 2021-04-24 to 2021-04-30

5. Test Standard (Method) used... : NEMA 250-2014
Enclosures for Electrical Equipment (1000 Volts Maximum)

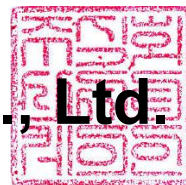
6. Results : Pass

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
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Approval	Tested by: Min-Gi Mun  (Signature)	Technical Manager: WonHyeon Choi  (Signature)
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2021-06-17

CTK Co., Ltd.



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Test item description	NETWORK CAMERA
Trade Mark	
Manufacturer	Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam
Model/Type reference	PNM-9022V
Ratings	Electrical
	PoE(DC 12 V, 1.34 A)
	Dimension : Ø 147 mm by 461.58, Ø 253 mm by 794.42 mm

List of Attachments (including a total number of pages in each attachment): Attachment 1: 11-13 pages (Construction Diagram including installation method) Attachment 2: 14-15 pages (Parts List) Attachment 3: 16-19 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

Copy of marking plate: The artwork above may be only a draft.  NETWORK CAMERA MODEL: PNM-9022V DC 12V --- 1.34A PoE(53V ---) 0.34A M/C: PNM-9022V/KUS Fac. ID: D  2020.10 S/N: Serial No. MAC ADDRESS: XX-XX-XX-XX-XX-XX CAN ICES-3(A)/NMB-3(A) HANWHA TECHWIN CO.,LTD. MADE IN KOREA 
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Test item particulars.....: Network Camera
Classification of installation and use Outdoor(Watertight/Corrosion Resistant)
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 250-2014
Name and address of factory (ies): 1. HANWHA TECHWIN SECURITY VIETNAM CO.,LTD Lot O-2, Que Vo Industrial Zone extended area, Nam Son commune, Bac Ninh city, Bac Ninh province, Vietnam 2. D-TECH CO.,LTD. 173-25, Saneop-ro, Gwonseon-gu, Suwon-si, Gyeonggi-do, Korea (Suwon Industrial Complex) General product information: Applied NEMA Rating : 4X Model PNM-9022V 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.

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).

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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NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict

3	CONSTRUCTION		
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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	More than 650 mm ² (1 in ²) in area Polymeric Materials used is declared as Min. V-2 Used to UL certified material. (See the attachment 2)	N/E
3.5	Corrosion Protection	Stainless steel and/or aluminium are declared as the materials used (See the attachment 2)	N/E
3.6	Openings	No openings in Product	N/A
3.7	Mounting	Mounting means are external to the equipment cavity (See the attachment 1)	P
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	No Knockouts	N/A
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)	P
3.15	Observation Windows	No Observation Window	N/A

4	MARKING		
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NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict
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	See the Attachment 3	P
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	
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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	N/E
5.10	Corrosion Protection-Type 3X, 3RX, 3SX, 4X Or 6P Enclosures	See clause 3.5	N/E

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NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict
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.	P
5.15	Test for Sharpness of Edges	No sharp edges	P

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NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict

Test Information

	Hose Down Test : Clause 5.7	P
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Description of Test

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).

Sample Dimension(Ø 147 mm by 461.58, Ø 253 mm by 794.42 mm)

Test Duration = 160 secs

Acceptance conditions:

The enclosure shall be considered to have met the requirements if at the conclusion of the test no water has entered the enclosure

Test Results

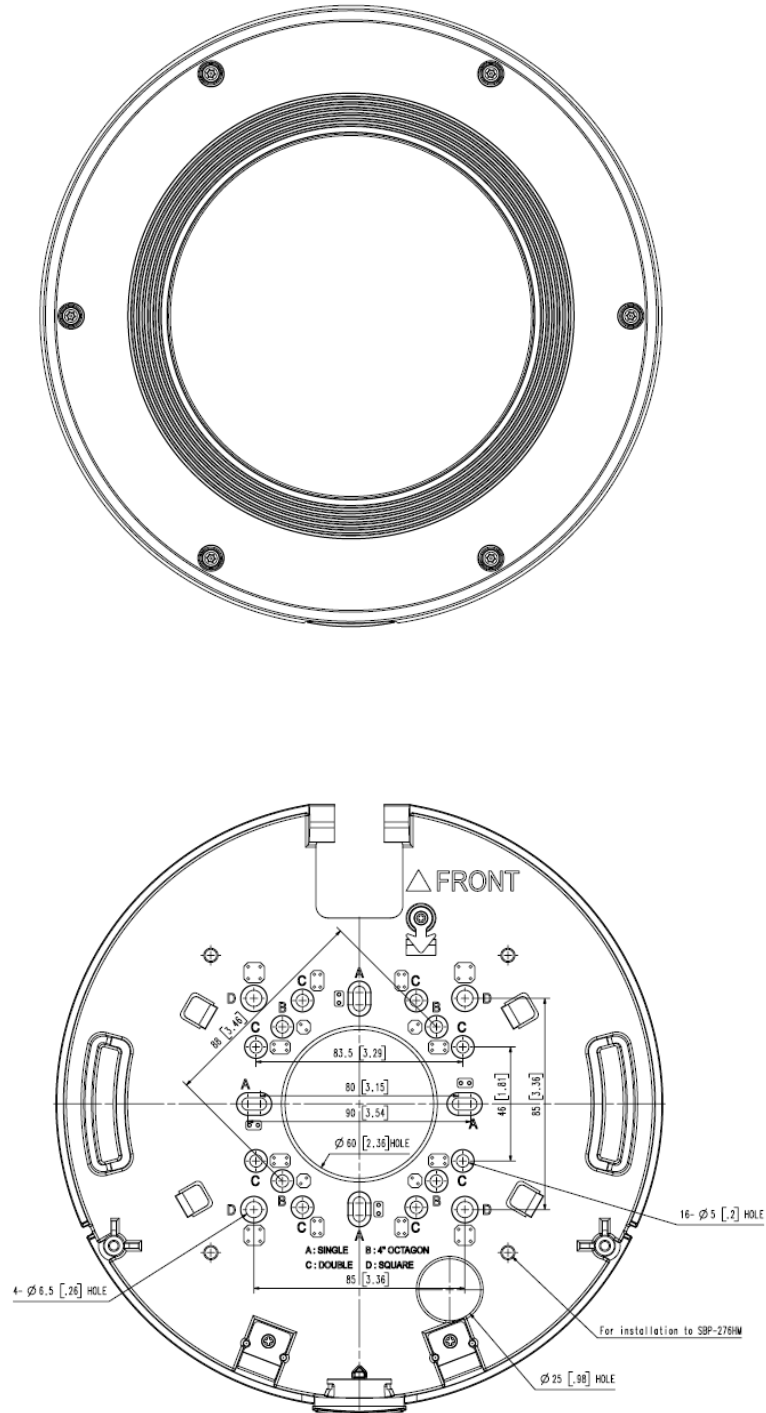
Sample No (Model)	Water Flow	Presence of water inside	Result
PNM-9022V	240 LPM	No	Pass

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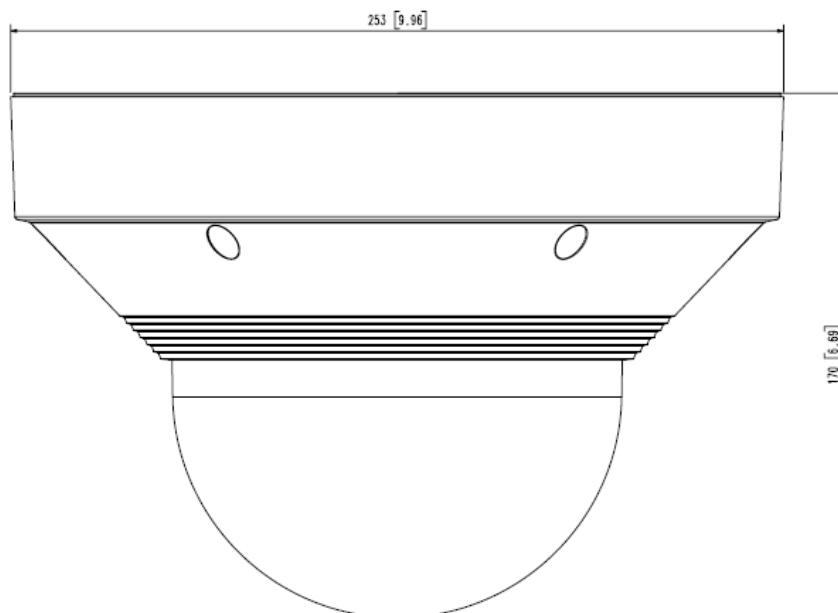
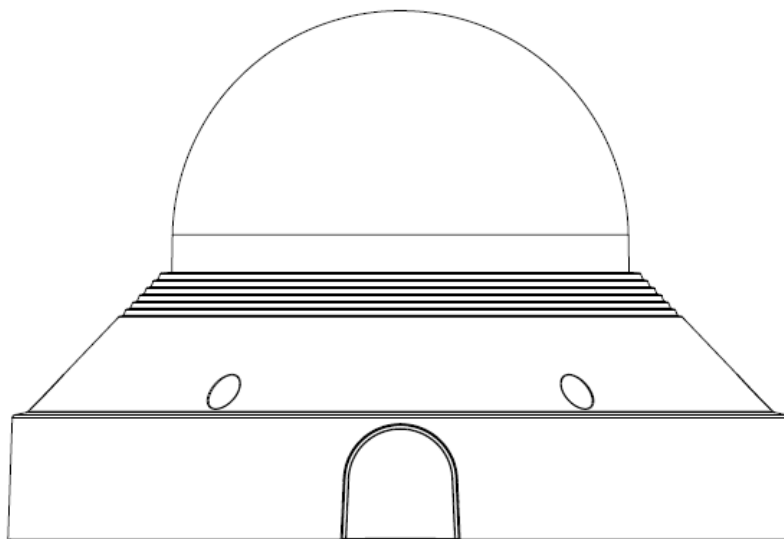
List of test equipment used:

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
S1-SW2	Stop Watch	0.01 s	CASIO/ NONE	2021-03-19	2023-03-03
C-S1-D09	Steel Measuring Tape	5 m	KOMELON/KMC-74N	2019-07-22	2021-07-02
S3-IP23	Water flow meter	250LPM	Nuri tech/ Z-6504	2020-07-22	2021-07-01
C-S1-D02	DIGITAL VERNIER CALIPER	150 mm	MITUTOYO/150 mm	2020-09-19	2021-08-24

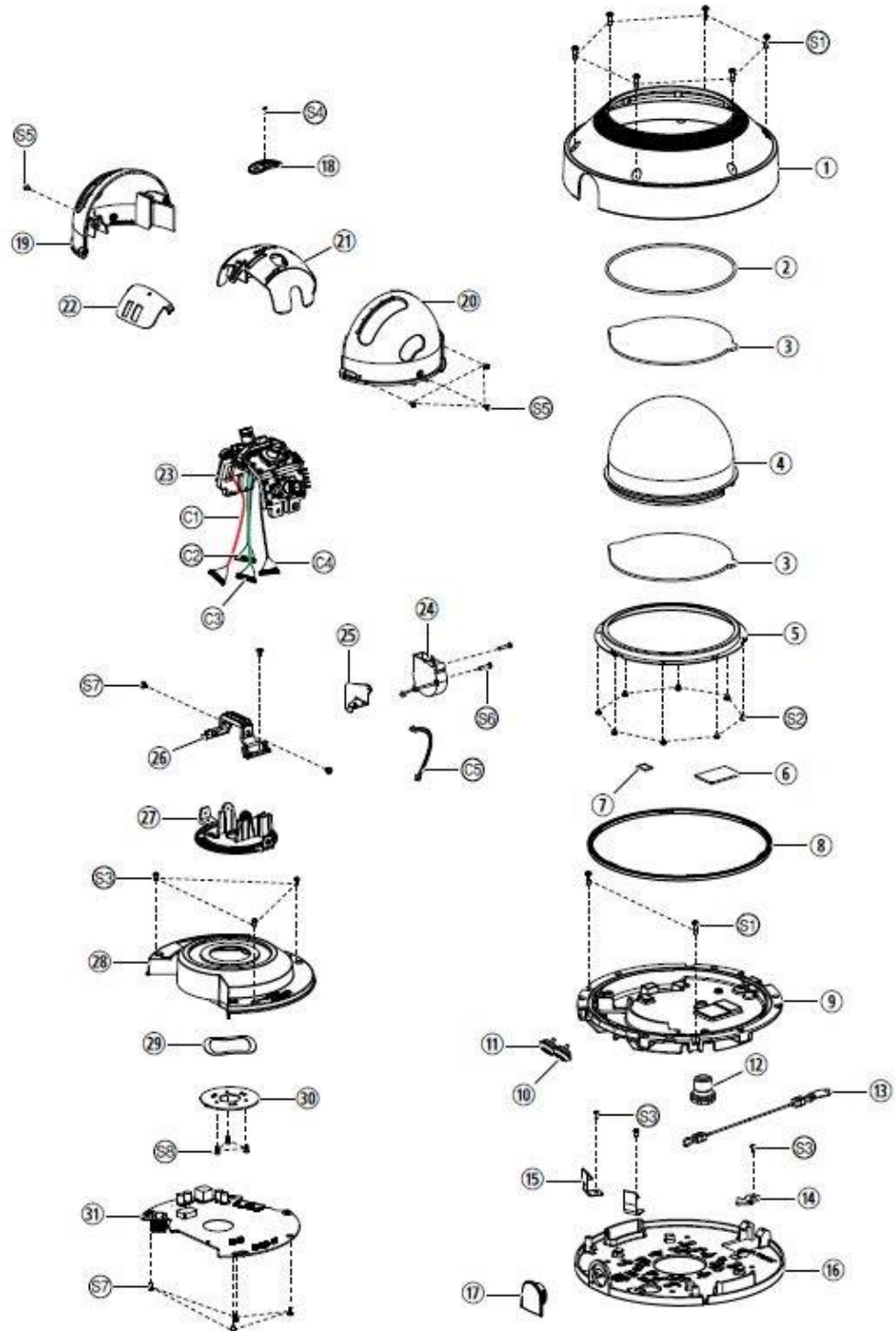
Attachment 1 – Construction Diagram and installation method



Attachment 1 – Construction Diagram and installation method



Attachment 1 – Construction Diagram and installation method





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REPORT No.:

CTK-2021-02273

Page (14) / (19) pages

Attachment 2 – Parts List

부품위치	부품번호	품명	규격	수량	공급여부	비고
1	FC29-013494A	CASE-TOP-PNM9022V	WISNET-ADC,WHITE	1	SA	W/W
	FC29-013494B	CASE-TOP-PNM9022V	HANWHA-ADC,WHITE	1	SA	KDO
2	FC10-001087A	RUBBER-GASKET_GLASS,SILICON		1	SA	
3	FC38-001358A	SHEET-PROTECT-DOME-280MM		2	SA	
4	FC15-007579A	COVER-OPTICAL;DOME-OUTDOOR-PTZ		1	SA	
5	Z8119113801A	BRACKET-DOME;AB61-00539A	SCC-C7453,SECC	1	SA	
6	FC28-000556A	PAD-THERMAL,W30,D45,T2;GP1500,2		1	SA	
7	FC28-002489A	PAD-THERMAL_1014T2_V8430BNH		3	SA	
8	FC10-001134A	RUBBER-GASKET_PNM-9000VQ;-		1	SA	
9	FC29-013495A	CASE-BOTTOM-PNM9022V;ADC12,WHITE		1	SA	
10	MC06-001042A	BUSHING-CABLE SET;SILICON,PNV-9080R		1	SA	
11	MC06-001082A	BUSHING-CABLE FLEXIBLE	SILICON,GRAY	1	SA	
12	HP08-001187	VENT-VALVE		1	SA	
13	RM01-004164A	WIRE,METALIC-SAFETY_9080VQ;STS304		1	SA	
14	FC09-006670A	BRACKET-WIRE-SNO-8081R;SUS304,1.2		1	SA	
15	FC38-001138A	SPRING,ETC-FIXED_9080VQ;SUS CSP		2	SA	
16	FC39-005726A	MOUNT-PLATE_PNM-9084QZ	ADC12,WHITE	1	SA	
17	FC15-006882A	COVER-BOT-XNV-8081Z;ASA		1	SA	
18	FC15-006803A	COVER-HANDLE_SHIELD_PNM9030V	PC,BLACK	1	SA	
19	FC29-013497A	CASE-SHIELD-LEFT;PC,BLACK		1	SA	
20	FC29-013498A	CASE-SHIELD-RIGHT-PNM9022V	PC,BLACK	1	SA	
21	FC15-007937A	COVER-INNER-PNM9022V;PC,BLACK		1	SA	
22	FC15-005170A	COVER-INNER-SLIDE;COVER		1	SA	
23	AM07-014831A	ASSY-FRAME FRONT-LENS-PNM9022V		1	SA	
24	EP07-000073A	FAN,ELECTRIC-BM4515-04W-850-L02		1	SA	
25	FC09-011788A	BRACKET-BLOWER;SECC		1	SA	
26	FC09-009736A	BRACKET-TILT-PNM9030V;ADC12		1	SA	
27	FC39-006332A	FRAME-PAN-PNM9022V;PC		1	SA	
28	FC39-006331A	FRAME-MAIN-PNM9022V;PC		1	SA	
29	FC18-003898A	WASHER,WAVE-VW,46,D47,D61,T0.4,H5.5,SK-5		1	SA	
30	FC30-004990A	PLATE-PAN FIXED 9020		1	SA	
31	AM06-009609A	ASSY,PCB-PNM-9022V NETWORK		1	SA	
C1	EP02-004481A	HARNESS-PNM-9030V;MCX	RED,30P-30P,210MM	1	SA	
C2	EP02-004482A	HARNESS-PNM-9030V;MCX	GREEN,30P-30P,210M	1	SA	
C3	EP02-004479A	HARNESS-PNM-9030V;MCX	BLUE,30P-30P,210MM	1	SA	
C4	EP02-004483A	HARNESS-PNM-9030V;MCX	BLACK,30P-30P,210M	1	SA	
C5	EP02-004852A	HARNESS-PNM-9022V	FAN CABLE,2P-2P,100MM	1	SA	
S1	FC18-004000A	SCREW-BUILT-IN_TORX20;0.7,15,NO.4		8	SA	
S2	Z8001055901A	SCREW-MACHINE		8	SA	
S3	Z9842308007	MACHINE SCREW(M3xL6,Zn-B)	M3 X 6P (ZN-B)	7	SA	
S4	Z8003019601A	SCREW-TAPTYPE		1	SA	
S5	Z8003013801A	SCREW-TAPTYPE		4	SA	
S6	Z8001057601A	MACHINE_SCREW	MACHINE_SCREW	2	SA	
S7	Z8009001301A	TAPPING SCREW(M3xL6,Zn-B)	M3X6P-BT/P-ZNB	7	SA	
S8	FC18-001254A	SCREW-FLAT HEAD		3	SA	

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REPORT No.:

CTK-2021-02273

Page (15) / (19) pages

Attachment 2 – Parts List**Component - Plastics**

File Number: E41613

COVESTRO DEUTSCHLAND AG [PC RESINS]

Chempark
Gebäude B207
Leverkusen, 51368 Germany



Makrolon: OD2015 + (z)(f1), LED2045 + (z)(f1)

Polycarbonate (PC), pellets

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

(z) - Material designation and color code may be followed by up to three letters and/or three numbers (does not include grades which are separately recognized with above material designation and suffix)

+ - Material designations may be followed by a six digit numerical code denoting color.

Flammability	Value	Test Method
Flame Rating (0.71 mm, NC)	V-2	UL 94 IEC 60695-11-10, -20
Thermal	Value	Test Method
RTI Elec (0.71 mm)	125 °C	UL 746
RTI Imp (0.71 mm)	115 °C	UL 746
RTI Str (0.71 mm)	125 °C	UL 746
Physical	Value	Test Method
Outdoor Suitability	f1	UL 746C

Attachment 3 – Photographs

<Photo 1 > Test Unit



<Photo 2 >



Attachment 3 – Photographs

<Photo 3 > Hose down test



Attachment 3 – Photographs

<Photo 4 > Test Result



<Photo 5 >



Attachment 3 – Photographs

<Photo 6 > Test Result

