


TEST REPORT

 CTK Co., Ltd. <small>The Power Leader of Global Regulatory Certification</small>	CTK Co., Ltd. 5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea Tel: +82-31-339-9970 Fax: +82-31-624-9501	Report No.: CTK-2023-02412 Page (1) / (25) pages	
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1. Applicant

◦ Name : Hanwha Vision Co., Ltd
◦ Address : 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488 KOREA
◦ Date of Receipt : 2023-10-16

2. Manufacturer

◦ Name : HANWHA VISION VIETNAM COMPANY LIMITED
◦ Address : Lot O-2, Que Vo Industrial Zone extended area, Nam Son
commune, Bac Ninh city, Bac Ninh province, Vietnam

3. Use of Report : Quality control

4. Test sample / Model : NETWORK CAMERA / TNO-C3032TRA

5. Date(s) of test : 2023-10-16 to 2023-10-24

6. Location of Test : ☒ Permanent Testing Lab ☐ On Site Testing

Address: (5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea)

7. Test Standard (Method) used : NEMA 250-2014



Enclosures for Electrical Equipment (1000 Volts
Maximum)

8. Testing Environment : Temperature: (25.0 ± 5.0) °C, Humidity: (40.0 ± 5.0) %.

9. Test Results : Refer to each test items

The results shown in this test report refer only to the sample(s) tested unless otherwise stated.
This Test Report cannot be reproduced, except in full.


The test was conducted as one sample, and the test result does not depend on the number of
samples


Affirmation	Tested by HyungUk Jeon  (Signature)	Technical Manager SooChan Bae  (Signature)
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2023-11-07

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:	TNO-C3032TRA
Ratings:	Electrical
TNO-C3032TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
TNO-C3010TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
TNO-C3020TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
TNO-C3030TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
TNO-C3012TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
TNO-C3022TRA : DC 12V \equiv 9.4 W / PoE (48 V \equiv 10.8 W),	
DC 12V \equiv 0.78 A / PoE (48 V \equiv 0.23 A),	
Dimension:	
Ø 147.1 mm by 461.89 mm, Ø 80 mm by 251.2 mm,	
Ø 36 mm by 113.04 mm, Ø 7.5 *3 mm by 70.65 mm, 185 mm	

List of Attachments (including a total number of pages in each attachment):	
Attachment 1: 14-18 pages (Construction Diagram including installation method)	
Attachment 2: 19-20 pages (Parts List)	
Attachment 3: 21-25 pages (Photographs)	
Summary of testing:	
Tests performed (name of test and test clause): Clause 5.7(Hose Down Test)	Testing location: CTK Co., Ltd. 5 Dongbu-ro 221beon-gil, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea
Copy of marking plate: The artwork above may be only a draft.	

제품명칭: NETWORK THERMAL CAMERA
모델명: TNO-C3010TRA
정격전압: DC 12V $\bar{\sim}$ 9.4W /
PoE (48V $\bar{\sim}$) 10.8W
M/C: TNO-C3010TRA/KDO Fac.ID: D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-StW-TNOC3020TRA
상호: 한화비전(주)
제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3010TRA
DC 12V $\bar{\sim}$ 0.78A /
PoE (48V $\bar{\sim}$) 0.23A
M/C: TNO-C3010TRA/KEX Fac.ID:D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO.,LTD.
Made in Korea

Rainproof Étanche
IP66

제품명칭: NETWORK THERMAL CAMERA
모델명: TNO-C3020TRA
정격전압: DC 12V $\bar{\sim}$ 9.4W /
PoE (48V $\bar{\sim}$) 10.8W
M/C: TNO-C3020TRA/KDO Fac.ID: D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-StW-TNOC3020TRA
상호: 한화비전(주)
제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3020TRA
DC 12V $\bar{\sim}$ 0.78A /
PoE (48V $\bar{\sim}$) 0.23A
M/C: TNO-C3020TRA/KEX Fac.ID:D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO.,LTD.
Made in Korea

Rainproof Étanche
IP66

제품명칭: NETWORK THERMAL CAMERA
모델명: TNO-C3032TRA
정격전압: DC 12V $\bar{\sim}$ 9.4W /
PoE (48V $\bar{\sim}$) 10.8W
M/C: TNO-C3032TRA/KDO Fac.ID: D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-StW-TNOC3032TRA
상호: 한화비전(주)
제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3032TRA
DC 12V $\bar{\sim}$ 0.78A /
PoE (48V $\bar{\sim}$) 0.23A
M/C: TNO-C3032TRA/KEX Fac.ID:D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO.,LTD.
Made in Korea

Rainproof Étanche
IP66

제품명칭: NETWORK THERMAL CAMERA
모델명: TNO-C3012TRA
정격전압: DC 12V $\bar{\sim}$ 9.4W /
PoE (48V $\bar{\sim}$) 10.8W
M/C: TNO-C3012TRA/KDO Fac.ID: D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호: R-R-StW-TNOC3032TRA
상호: 한화비전(주)
제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3012TRA
DC 12V $\bar{\sim}$ 0.78A /
PoE (48V $\bar{\sim}$) 0.23A
M/C: TNO-C3012TRA/KEX Fac.ID:D
DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
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Report No.:
CTK-2023-02412
Page (4) / (25) pages

제품명칭: NETWORK THERMAL CAMERA

모델명: TNO-C3022TRA

정격전압: DC 12V $\bar{\cdot}$ 9.4W /
PoE (48V $\bar{\cdot}$) 10.8W

M/C: TNO-C3022TRA/KDO Fac. ID: D

DATE S/N: Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

인증번호: R-R-StW-TNOC3032TRA

상호: 한화비전(주)

제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3022TRA

DC 12V $\bar{\cdot}$ 0.78A /
PoE (48V $\bar{\cdot}$) 0.23A

M/C: TNO-C3022TRA/KEX Fac.ID:D

DATE S/N: Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

CAN ICES-3(A)/NMB-3(A)

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IP66

제품명칭: NETWORK THERMAL CAMERA

모델명: TNO-C3032TRA

정격전압: DC 12V $\bar{\cdot}$ 9.4W /
PoE (48V $\bar{\cdot}$) 10.8W

M/C: TNO-C3032TRA/KDO Fac. ID: D

DATE S/N: Serial No.

MAC ADDRESS: XX-XX-XX-XX-XX-XX

인증번호: R-R-StW-TNOC3032TRA

상호: 한화비전(주)

제조사/제조국가:한화비전(주)/한국



NETWORK THERMAL CAMERA,TNO-C3032TRA

DC 12V $\bar{\cdot}$ 0.78A /
PoE (48V $\bar{\cdot}$) 0.23A

M/C: TNO-C3032TRA/KEX Fac.ID:D

DATE S/N: Serial No.


MAC ADDRESS: XX-XX-XX-XX-XX-XX

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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 <input type="checkbox"/> comma / <input checked="" type="checkbox"/> 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 VISION VIETNAM COMPANY LIMITED 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 TNO-C3032TRA is basic model which was tested.

Model description

Basic Model	TNO-C3032TRA	
Series Model	TNO-C3010TRA TNO-C3020TRA ,TNO-C3030TRA TNO-C3012TRA , TNO-C3022TRA :	
Model differences	TNO-C3012TRA TNO-C3022TRA	Use of the same external shape and materials (case, finishing material, PCB, cable, etc.), differences in Fixed Lens inside the product.
	TNO-C3010TRA TNO-C3020TRA TNO-C3030TRA	Use of the same external shape and materials (case, finishing material, PCB, cable, etc.), differences in Fixed Lens and SW inside the product.

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
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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 147.1 mm by 461.89 mm, Ø 80 mm by 251.2 mm,

Ø 36 mm by 113.04 mm, Ø 7.5 *3 mm by 70.65 mm, 185 mm


Test Duration = 180.29 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

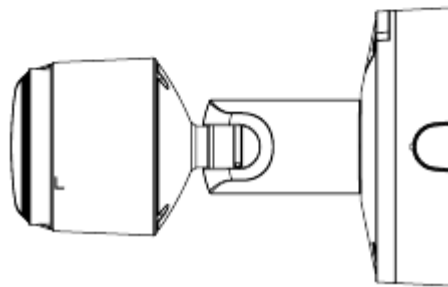
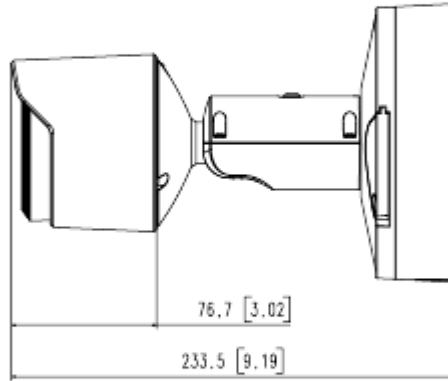
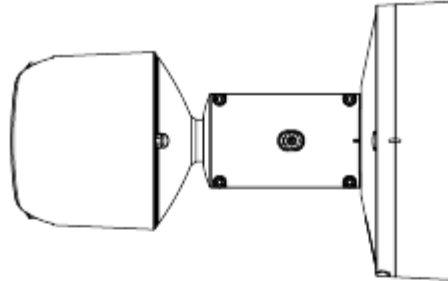
Sample No (Model)	Water Flow	Presence of water inside	Result
TNO-C3032TRA	240 LPM	No	Pass

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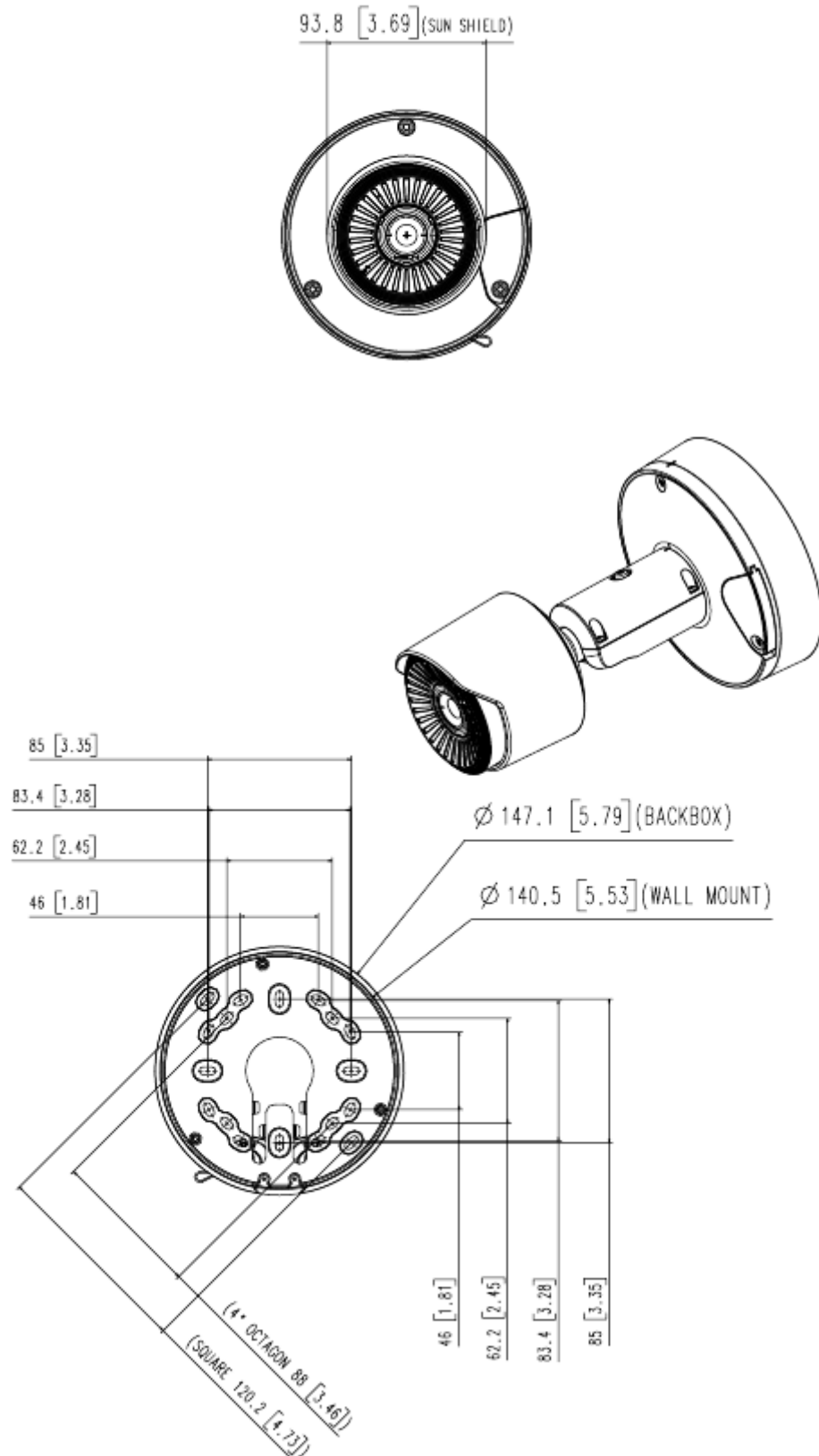
List of test equipment used:

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	2022-02-22	2024-02-21
C-S1-D09	Steel Measuring Tape	5 m	KOMELON/KMC-74N	2023-02-02	2025-02-02
S3-IP23	Water flow meter	250LPM	Nuri tech/ Z-6504	2023-02-12	2024-02-12
C-S1-D02	DIGITAL VERNIER CALIPER	150 mm	MITUTOYO/150 mm	2024-07-31	2024-07-31

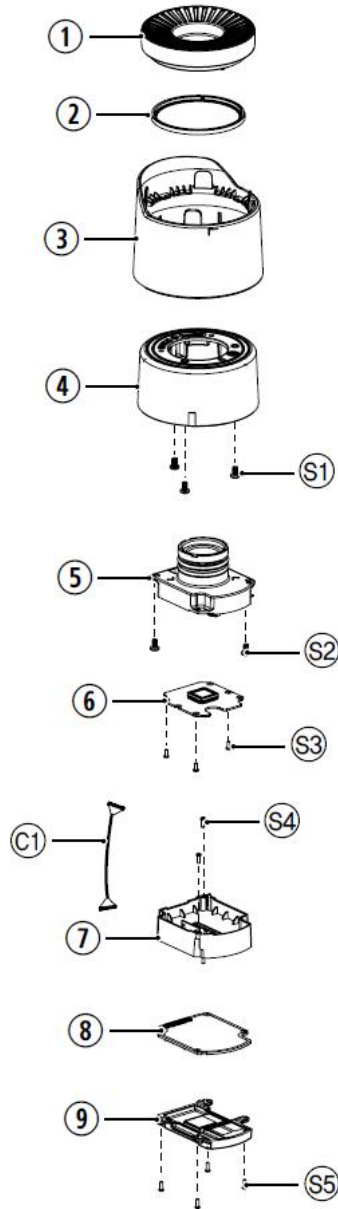
Attachment 1 – Construction Diagram and installation method



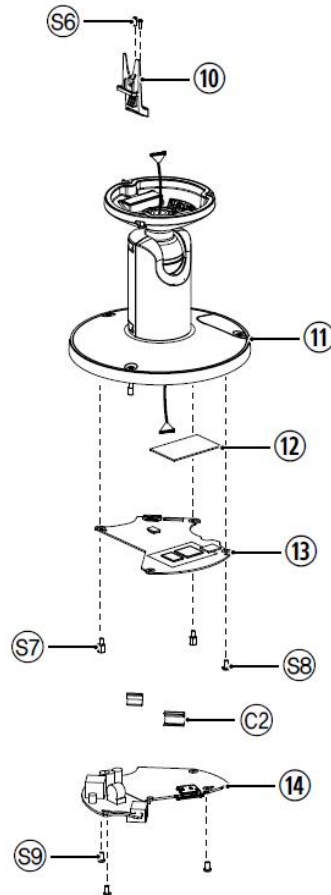
Attachment 1 – Construction Diagram and installation method



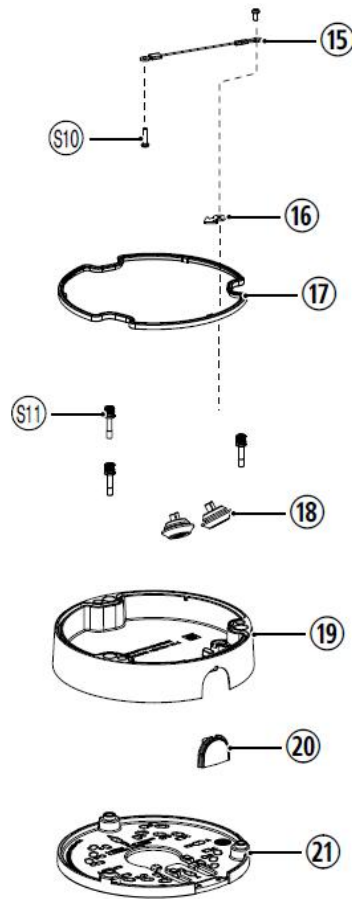
Attachment 1 – Construction Diagram and installation method



Attachment 1 – Construction Diagram and installation method



Attachment 1 – Construction Diagram and installation method



Attachment 2 – Parts List

No	Part-Code	Part-Name	소요량
1	FC15-010056A	COVER-DECO-FRONT_TNO-C3022TRA	1
2	HP07-001850A	GASKET-FRONT-BODY_TNO-C3022TRA;SILICON	1
3	AM08-007375A	ASSY-SHIELD-SUN	1
4	FC29-016593A	CASE-BODY-FRONT_TNO-C3022TRA	1
5	FC29-016592A	HOLDER-LENS_TNO-C3022TRA	1
6	AM06-011195A	ASSY,PCB-DETECTOR	1
7	FC29-016660A	HOLDER-PCB-NUC_TNO-C3022TRA	1
8	AM06-011194A	ASSY, PCB-NUC_C3010TRA	1
9	EP07-001971A	HEATSINK-NUC-PBA_TNO-C30xxTRA	1
10	FC29-016661A	HOLDER-CABLE-MAIN_TNO-C3022TRA	1
11	AM08-007301A	ASSY-HALF-REAR	1
12	FC28-003047A	T-PAD 48x30x1.0T	1
13	AM06-011192A	ASSY PCB NETWORK_TNO-C3010TRA	1
14	AM06-011193A	ASSY PCB POWER	1
15	RM01-005941A	WIRE-SAFETY	1
16	FC09-006670A	BRACKET-WIRE	1
17	HP07-001638A	GASKET-BACKBOX_XNO-C9083R	1
18	MC06-001042A	BUSHING-CABLE	1
19	FC29-014049A	CASE-BOTTOM-BACKBOX	1
20	FC15-008214A	COVER-CONDUIT	1
S1	Z6001049601A	SCREW M3xL6, MACHINE WHITE	3
S2	Z6001049601A	SCREW M3xL6, MACHINE WHITE	2
S3	Z6001055201A	SCREW M2xL5, MACHINE BLACK	3
S4	Z6003019601A	SCREW M2xL6, TAP-TYPE BLACK	2
S5	Z6003019601A	SCREW M2xL6, TAP-TYPE BLACK	4
S6	Z6001055201A	SCREW M2xL5, MACHINE BLACK	2
S7	FC29-014054A	SUPPORTER	2
S8	Z9642306007	SCREW M3xL6	2
C1	EP02-004794A	HARNESS-XNP-9300W;MCX,50p	1
C2	EP16-003538A	FPCB	1



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Attachment 2 – Parts List



Grade	HN-1068
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Component - Plastics E115797

Guide Information

LOTTE CHEMICAL CORPORATION
56 Gosan-ro, Ulsang-si Gyeonggi-do 16073 KR

HN-1068(+)(f1)
Polycarbonate (PC) "INFINO", furnished as pellets

Color	Min. Thk (mm)	Flame Class	HWI	HAI	RTI Elec	RTI Imp	RTI Str
ALL	1.5	V-0	3	3	130	130	130
	3.0	V-0	-	-	130	130	130

Comparative Tracking Index (CTI): 3
Dielectric Strength (kV/mm): 31.8
High-Voltage Arc Tracking Rate (HVTR): -
Dimensional Stability (%): -

Inclined Plane Tracking (IPT) kV: -
Volume Resistivity (10⁹ ohm-cm): 17
Surface Resistivity (10⁹ ohms/square): -
High Volt, Low Current Arc Resis (D495): -


(+) - 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.

ANSI/UL 94 small-scale test data does not pertain to building materials, furnishings and related contents. ANSI/UL 94 small-scale test data is intended solely for determining the flammability of plastic materials used in the components and parts of end-product devices and appliances, where the acceptability of the combination is determined by UL.

Report Date: 1998-08-24
Last Revised: 2019-08-27 © 2020 UL LLC



IEC and ISO Test Methods				
Test Name	Test Method	Units	Thk (mm)	Value
Flammability	IEC 60695-11-10	Class (color)	1.5	V-0 (ALL)
			3.0	V-0 (ALL)
Glow-Wire Flammability (GWF1)	IEC 60695-2-12	°C	1.5	960
			3.0	960
Glow-Wire Ignition (GWIT)	IEC 60695-2-13	°C	1.5	825
			3.0	825
IEC Comparative Tracking Index	IEC 60112	Volts (Max)	-	-
IEC Ball Pressure	IEC 60695-10-2	°C	-	130
ISO Heat Deflection (1.80 MPa)	ISO 75-2	°C	-	-
ISO Tensile Strength	ISO 527-2	MPa	-	-
ISO Flexural Strength	ISO 178	MPa	-	-
ISO Tensile Impact	ISO 8256	kJ/m ²	-	-
ISO Izod Impact	ISO 180	kJ/m ²	-	-
ISO Charpy Impact	ISO 179-1	kJ/m ²	-	-

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Attachment 3 – Photographs

Test Unit





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Attachment 3 – Photographs

Hose down test



Attachment 3 – Photographs

Test Result





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Attachment 3 – Photographs



Attachment 3 – Photographs



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