TESTING REPORT

CTK Co., Ltd.
(Ho-dong) 113, Yejik-ro, Cheoin-gu, Yongin-si,
Gyeonggi-do, KOREA, REPUBLIC OF
Tel: +82-31-339-9970
Fax: +82-31-624-9501

Report No.:
CTK-2018-00663

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 ..... : 2016-03-14

2. Manufacturer

- Name ..... : TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO.,LTD.
- Address ..... : No.11 Weiliu Rd,Micro-Electronic Industrial Park,TEDA,Tianjin,300385,People's Republic of China

3. Test sample / Model ..... : NETWORK CAMERA / SNV-L6014RM* (*N:NT/P:PAL)

4. Date(s) of test ..... : 2016-03-18 to 2016-03-25

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.
This report shall not be reproduced except in full without the written approval of CTK

Approval	Tested by: WonHyeon. Choi.	(Signature)	Technical Manager: YenHwang Jung	(Signature)

2018-03-20

CTK Co., Ltd.

Test item description..... :	NETWORK CAMERA
Trade Mark..... :	WISENET
Manufacturer ..... :	TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO.,LTD. No.11 Weiliu Rd,Micro-Electronic Industrial Park,TEDA,Tianjin,300385,People's Republic of China
Model/Type reference..... :	SNV-L6014RM* (*N:NT/P:PAL)
Ratings..... :	Electrical : POE Dimension : 98.9 mm by 100 mm by 52 mm

List of Attachments (including a total number of pages in each attachment):

Attachment 1: 13-14 pages (Construction Diagram including installation method)

Attachment 2: 15 pages (Parts List)

Attachment 3: 16-17 pages (photographs)

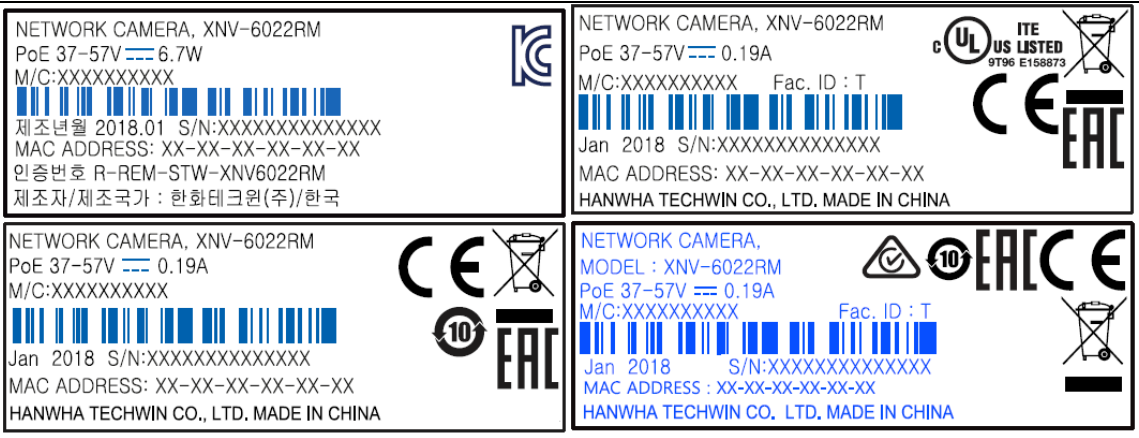
Summary of testing:

Tests performed (name of test and test clause): **Clause 5.7(Hose Down Test)**	**Testing location:** CTK Co., Ltd. (Ho-Dong) 113, Yejik-ro Cheoin-gu, Yongin-shi Gyeonggi-do KOREA, REPUBLIC OF

Copy of marking plate: The artwork above may be only a draft.




NETWORK CAMERA, XNV-6013M
PoE 37-57V ⎓ 7.2W
M/C:XXXXXXXXXX
제조년월 2018.01 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호 R-REM-STW-XNV6013M
제조자/제조국가 : 한화테크윈(주)/한국
NETWORK CAMERA, XNV-6012
PoE 37-57V ⎓ 6.5W
M/C:XXXXXXXXXX
제조년월 2018.01 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호 R-REM-STW-XNV6012
제조자/제조국가 : 한화테크윈(주)/한국
NETWORK CAMERA, XNV-6013M
PoE 37-57V ⎓ 0.2A
M/C:XXXXXXXXXX
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6012
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6013M
PoE 37-57V ⎓ 0.2A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6012
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA,
MODEL : XNV-6013M
PoE 37-57V ⎓ 0.2A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS : XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO. LTD. MADE IN CHINA
NETWORK CAMERA,
MODEL : XNV-6012
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS : XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO. LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6012M
PoE 37-57V ⎓ 6.5W
M/C:XXXXXXXXXX
제조년월 2018.01 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호 R-REM-STW-XNV6012M
제조자/제조국가 : 한화테크윈(주)/한국
NETWORK CAMERA, XNV-6022R
PoE 37-57V ⎓ 6.7W
M/C:XXXXXXXXXX
제조년월 2018.01 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
인증번호 R-REM-STW-XNV6022R
제조자/제조국가 : 한화테크윈(주)/한국
NETWORK CAMERA, XNV-6012M
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6022R
PoE 37-57V ⎓ 0.19A
M/C:XXXXXXXXXX
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6012M
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA, XNV-6022R
PoE 37-57V ⎓ 0.19A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS: XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO., LTD. MADE IN CHINA
NETWORK CAMERA,
MODEL : XNV-6012M
PoE 37-57V ⎓ 0.18A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS : XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO. LTD. MADE IN CHINA
NETWORK CAMERA,
MODEL : XNV-6022R
PoE 37-57V ⎓ 0.19A
M/C:XXXXXXXXXX Fac. ID : T
Jan 2018 S/N:XXXXXXXXXXXXXX
MAC ADDRESS : XX-XX-XX-XX-XX-XX
HANWHA TECHWIN CO. LTD. MADE IN CHINA



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. TIANJIN SAMSUNG TECHWIN OPTO-ELECTRONIC CO.,LTD
No.11 Weiliu Rd,Micro-Electronic Industrial Park,TEDA,Tianjin,300385,People's Republic of China

General product information:

Applied NEMA Rating : 4X

Model SNV-L6014RMN is basic model which was tested.

Basic Model	SNV-L6014RM* (*N:NT/P:PAL)
Series model	SNV-L6013R* (*N: NT / P:PAL), XNV-6012M , XNV-6012, XNV-6022RM, XNV-6022R

Model differences:

SNV-L6014RMN and SNV-L6014RMP

The model differences are only for function not related to the quality of enclosure integrity.

The basic model has a hole but Series model is not.

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	Non-vented 5.7	Windblown dust protected	No ingress of dust	6
	Vented 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

NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict
3	**CONSTRUCTION**		
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 (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**		
4.1	Type Designations	"Type 4X" Marking is declared to be on the product before on the market	P

NEMA 250-2014			
Clause	Requirement + Test	Result - Remark	Verdict
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**		
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
5.11	Test for Protection Against Ingress of Water (Temporary Submersion)	Rated 4X	N/A

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

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

Test Information

	Hose Down Test : Clause 5.7	**P**

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(98.9 mm by 100 mm)

Test Duration = 82.2 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

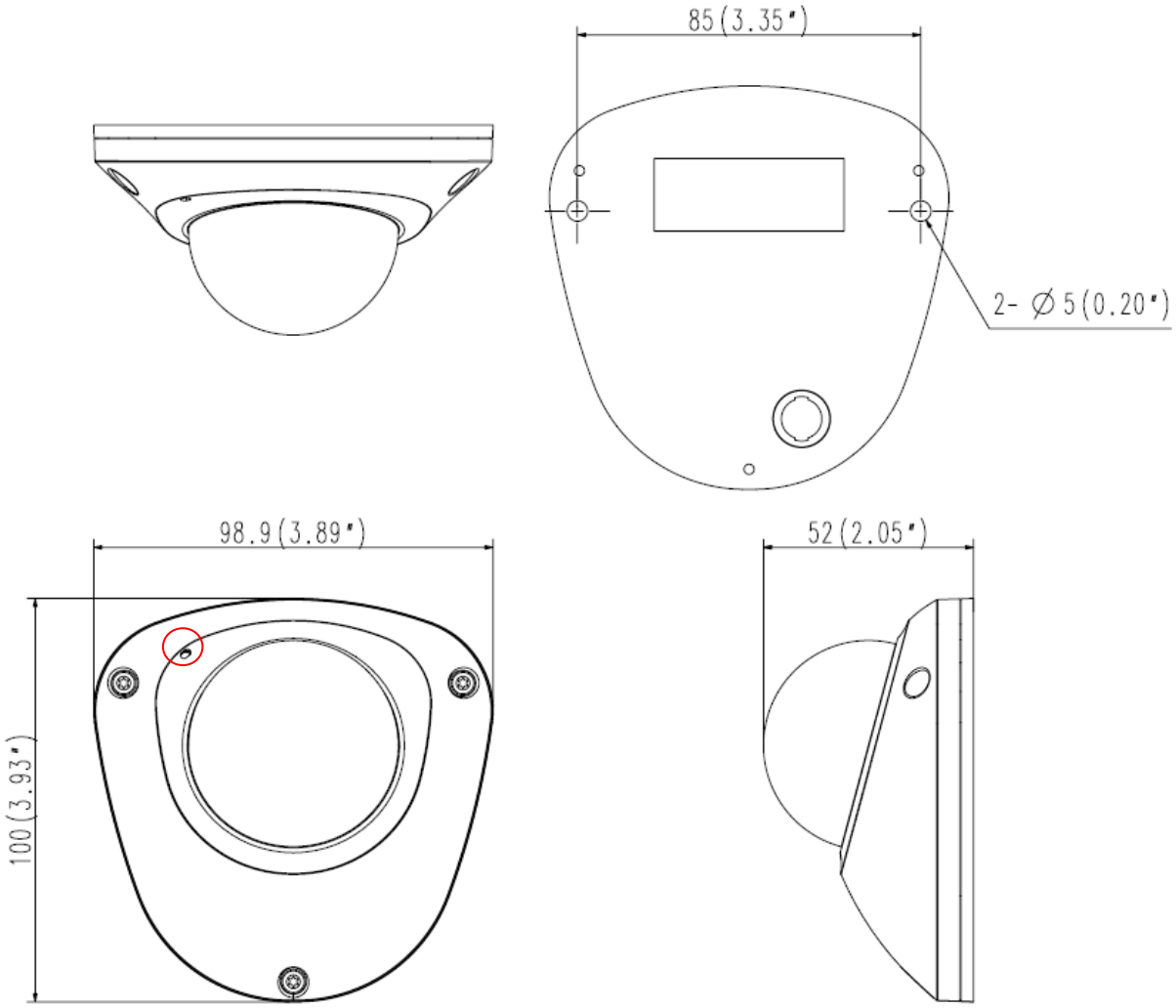
Test Results

Sample No (Model)	Water Flow	Presence of water inside	Result
SNV-L6014RMN	240 LPM	No	Pass

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-SW1	Stop Watch	0.01 s	TOPPA / NONE	2015-03-04	2017-03-03
S1-D09	Steel Measuring Tape	5 m	KOMELON/KMC-74N	2013-06-11	2018-06-11
S3-IP20	Water flow meter	250LPM	Nuri tech/Z-4007	2016-02-23	2017-02-23
S1-D04	DIGITAL VERNIER CALIPER	150 mm	MITUTOYO/150 mm	2015-09-01	2016-09-01

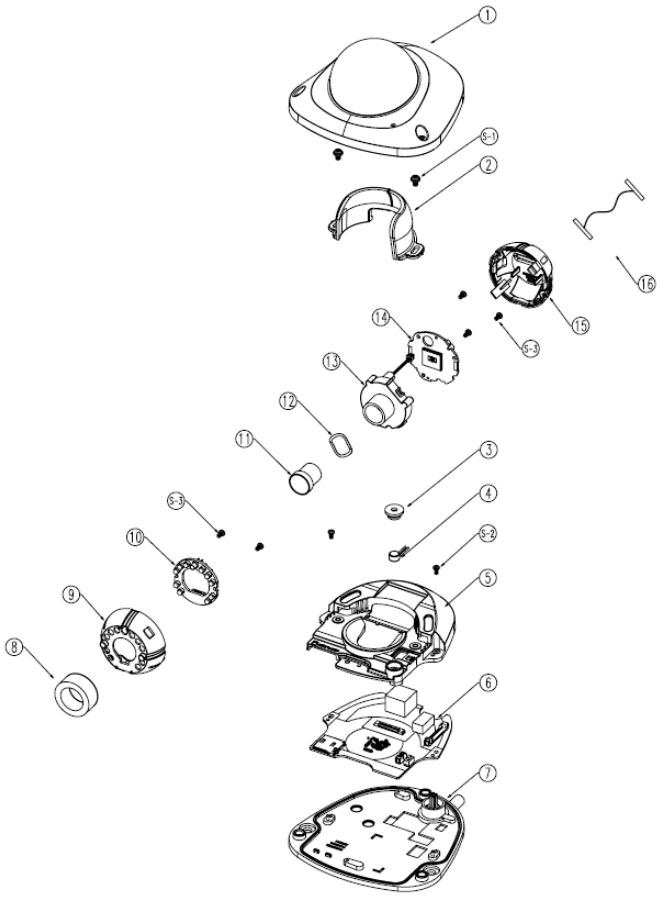
Attachment 1 – Construction Diagram and installation method



Unit: mm

Model differences: Red part of the hole

Attachment 1 – Construction Diagram and installation method



SNV-L6014RM

No	Code	Name	Q'ty	Remark
1	AM07-007536A	ASSY,CASE-TOP	1	
S-1	Z6001042201A	SCREW-MACHINE,M2.6L4,WBH	2	
2	FC09-007359A	BRACKET-MODULE-FIXED	1	
3	FC15-005001A	COVER-MIC-RUBBER	1	
4	EP10-001083A	MODULE,ELECTRONIC-WHO6035CW	1	
S-2	Z6001055101A	SCREW-MACHINE,M2L4	2	
5	FC39-003801A	FRAME-MAIN	1	
6	AM06-006109A	ASSY,PCB-SNV-L6014RM_NETWORK	1	
7	AM07-007537A	ASSY,CASE-BOTTOM	1	
8	FC29-007945A	HOOD-IR	1	
9	FC29-007844A	HOLDER-MODULE-TOP	1	
10	AM06-006106A	ASSY,PCB-LED	1	
S-3	Z6003019801A	SCREW-TAPPTING,M2L4	5	
11	EP14-000577A	LENS SET-YTOT,2M,FIXED	1	
12	Z6031007302A	WAVE_WASHER_H3	1	
13	AM07-007678A	ASSY,DN MODULE-DC	1	
14	AM06-006111A	ASSY,PCB-SENSOR	1	
15	FC29-007845A	HOLDER-MODULE-BOTTOM	1	
16	EP02-002222A	HARNESS_SENSOR_TO_NW_MCX	1	

SNV-L6013R

No	Code	Name	Q'ty	Remark
1	AM07-007536B	ASSY,CASE-TOP	1	
S-1	Z6001042201A	SCREW-MACHINE,M2.6L4,WBH	2	
2	FC09-007359A	BRACKET-MODULE-FIXED	1	
3	FC15-005001A	COVER-MIC-RUBBER	0	
4	EP10-001083A	MODULE,ELECTRONIC-WHO6035CW	0	
S-2	Z6001055101A	SCREW-MACHINE,M2L4	2	
5	FC39-003801A	FRAME-MAIN	1	
6	AM06-006107A	ASSY,PCB-SNV-L6013R_NETWORK	1	
7	AM07-007681A	ASSY,CASE-BOTTOM	1	
8	FC29-007945A	HOOD-IR	1	
9	FC29-007844A	HOLDER-MODULE-TOP	1	
10	AM06-006106A	ASSY,PCB-LED	1	
S-3	Z6003019801A	SCREW-TAPPTING,M2L4	5	
11	EP14-000577A	LENS SET-YTOT,2M,FIXED	1	
12	Z6031007302A	WAVE_WASHER_H3	1	
13	AM07-007678A	ASSY,DN MODULE-DC	1	
14	AM06-006111A	ASSY,PCB-SENSOR		
15	FC29-007845A	HOLDER-MODULE-BOTTOM	1	
16	EP02-002222A	HARNESS_SENSOR_TO_NW_MCX	1	

Attachment 2 – Parts List

No.	Name	Hanwha Techwin No.	Raw material Technical Data	Remark
1	SCREW	FC18-001418A	Stainless-steel(XM7)	-
2	CASE-TOP	FC29-007846B	Aluminum (ADC12)	SNV-L6013R
		FC29-007846A		SNV-L6014RM
3	GASKET-DOME	HP07-000254A	SILICON	-
4	COVER-DOME	FC15-002790B	Polycarbonate (SABIC, HF1130R)	V-2
5	GASKET-TOP	HP07-001123A	SILICON	-
6	CASE-BOTTOM	FC29-007843A	Aluminum (ADC12)	-

Attachment 3 – Photographs

<Photo 1 > Test Unit



<Photo 2 > Test Unit



Attachment 3 – Photographs

<Photo 3 > Hose down test



<Photo 4 > Test Result

