


TEST REPORT

 CTK Co., Ltd. <small>The Prime Leader of Global Regulatory Certification</small>	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-2020-04961-1 Page(1) / (36) Pages	
---	---	--	--

1. Applicant

- Name Hanwha Techwin Co., Ltd.
- Address 6 Pangyo-ro 319Beon-gil, Bundang-gu, Seongnam-si,
Gyeonggi-do, 13488 KOREA
- Date of Receipt..... 2020-10-05

2. Manufacturer

- Name Hanwha Techwin Co., Ltd.

3. Use of Report Quality control

4. Test sample / Model NETWORK CAMERA / XNP-9250R



5. Date(s) of test 2020-12-04 to 2020-12-11

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

7. Testing Environment..... Temperature: (25.0 ± 10.0) °C, Humidity: (50 ± 25) %R.H., Air Pressure: (99.0 ± 2) kPa

8. Results Refer to each test items


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:	Technical Manager:
	Min-Gi Mun  (Signature)	WonHyeon Choi  (Signature)

2021-07-30

CTK Co., Ltd.



	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-2020-04961-1 Page(2) / (36) Pages	
---	---	---	--

Test place

Institution name	CTK Co., Ltd.
Address	142, Dongbu-ro, Cheoin-gu, Yongin-si, Gyeonggi-do, Republic of Korea



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-2020-04961-1

Page(3) / (36) Pages

Test item description.....: NETWORK CAMERA

Trade Mark.....: **WISeNET**

Manufacturer: 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

Model/Type reference.....: XNP-9250R

Ratings.....: Electrical

XNP-6400 : PoE(53 V $\overline{\text{---}}$) 25 W / PoE(53 $\overline{\text{---}}$) 0.48 A

XNP-6400R : PoE(55 V $\overline{\text{---}}$) 40 W / PoE(55 $\overline{\text{---}}$) 0.72 A

XNP-8250 : PoE(53 V $\overline{\text{---}}$) 25 W / PoE(53 $\overline{\text{---}}$) 0.48 A

XNP-8250R : PoE(55 V $\overline{\text{---}}$) 40 W / PoE(55 $\overline{\text{---}}$) 0.72 A

XNP-9250 : PoE(53 V $\overline{\text{---}}$) 25 W / PoE(53 $\overline{\text{---}}$) 0.48 A

XNP-9250R : PoE(55 V $\overline{\text{---}}$) 40 W / PoE(55 $\overline{\text{---}}$) 0.72 A

QNP-6320R : PoE(53 V $\overline{\text{---}}$) 0.48 A

QNP-6250R : PoE(53 V $\overline{\text{---}}$) 0.48 A

XNP-L6322R : PoE(53 V $\overline{\text{---}}$) 25.5 W

XNP-L6252R : PoE(53 V $\overline{\text{---}}$) 25.5 W

Dimension : \varnothing 158 mm by 496.4 mm, \varnothing 6 mm by 18.9 mm * 2,
 \varnothing 73 mm by 229.4 mm, \varnothing 2.9 mm by 9.2 mm * 3,
 \varnothing 5.4 mm by 17 mm * 3

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

Attachment 1: 14-16 pages (Construction Diagram including installation method)

Attachment 2: 17-34 pages (Parts List)

Attachment 3: 35-36 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.



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-2020-04961-1

Page(4) / (36) Pages

기기명칭: NETWORK CAMERA
모델명: XNP-6400
정격전압: PoE (53V ---) 25W

M/C: XNP-6400/KDO



DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP6400

상호: 한화테크윈(주)

제조사/제조국가:한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-6400
PoE (53V ---) 0.48A

M/C: XNP-6400/KAN Fac. ID: D



DATE 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



기기명칭: NETWORK CAMERA
모델명: XNP-6400R
정격전압: PoE (55V ---) 40W

M/C: XNP-6400R/KDO



DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP6400R

상호: 한화테크윈(주)

제조사/제조국가:한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-6400R
PoE (55V ---) 0.72A

M/C: XNP-6400R/KAN Fac. ID: D



DATE 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



기기명칭: NETWORK CAMERA
모델명: XNP-8250
정격전압: PoE (53V ---) 25W

M/C: XNP-8250/KDO



DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP9250

상호: 한화테크윈(주)

제조사/제조국가:한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-8250
PoE (53V ---) 0.48A

M/C: XNP-8250/KAN Fac. ID: D



DATE 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



기기명칭: NETWORK CAMERA
모델명: XNP-8250R
정격전압: PoE (55V ---) 40W

M/C: XNP-8250R/KDO



DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP9250R

상호: 한화테크윈(주)

제조사/제조국가:한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-8250R
PoE (55V ---) 0.72A

M/C: XNP-8250R/KAN Fac. ID: D



DATE 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





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-2020-04961-1

Page(5) / (36) Pages

기기명칭: NETWORK CAMERA
모델명: XNP-9250
정격전압: PoE (53V ~) 25W

M/C: XNP-9250/KDO

DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP9250

상호: 한화테크윈(주)

제조사/제조국가: 한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-9250
PoE (53V ~) 0.48A

M/C: XNP-9250/KAN Fac. ID: D

DATE 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



기기명칭: NETWORK CAMERA
모델명: XNP-9250R
정격전압: PoE (55V ~) 40W

M/C: XNP-9250R/KDO

DATE S/N: Serial No.

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

인증번호: R-R-StW-XNP9250R

상호: 한화테크윈(주)

제조사/제조국가: 한화테크윈(주)/한국



NETWORK CAMERA
MODEL: XNP-9250R
PoE (55V ~) 0.72A

M/C: XNP-9250R/KAN Fac. ID: D

DATE 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



기기명칭: NETWORK CAMERA
모델명: XNP-L6322R
정격전압: PoE (53V ~) 25.5W

M/C: XNP-L6322R/KDO

DATE S/N: Serial No.

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

인증번호:

상호: 한화테크윈(주)

제조사/제조국가: 한화테크윈(주)/한국



기기명칭: NETWORK CAMERA
모델명: XNP-L6252R
정격전압: PoE (53V ~) 25.5W

M/C: XNP-L6252R/KDO

DATE S/N: Serial No.


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

인증번호:

상호: 한화테크윈(주)

제조사/제조국가: 한화테크윈(주)/한국



 CTK Co., Ltd. <small>The Prime Leader of Global Regulatory Certification</small>	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-2020-04961-1 Page(6) / (36) Pages	
---	---	--	--

	<div data-bbox="606 358 1133 705">  NETWORK CAMERA MODEL: QNP-6320R PoE (53V~) 0.48A M/C: QNP-6320R/KAN Fac. ID: D  DATE 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  </div> <div data-bbox="606 716 1133 1064">  NETWORK CAMERA MODEL: QNP-6250R PoE (53V~) 0.48A M/C: QNP-6250R/KAN Fac. ID: D  DATE 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  </div>	
--	---	--

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

**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-2020-04961-1

Page(7) / (36) Pages

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 XNP-9250R is basic model which was tested.

Basic Model	XNP-9250R
Series model	XNP-9250, XNP-8250R, XNP-6400, XNP-8250, XNP-6400R, QNP-6320R, QNP-6250R, XNP-L6322R, XNP-L6252R

Model differences:

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

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

 CTK Co., Ltd. <small>The Prime Leader of Global Regulatory Certification</small>	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-2020-04961-1 Page(10) / (36) Pages	
---	---	---	--

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. HB 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		
----------	----------------	--	--

 CTK Co., Ltd. <small>The Prime Leader of Global Regulatory Certification</small>	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-2020-04961-1 Page(11) / (36) Pages	
---	---	---	--


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	
----------	---------------------	--

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

 <p>CTK Co., Ltd. The Prime Leader of Global Regulatory Certification</p>	<p>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</p>	<p>Report No.: CTK-2020-04961-1 Page(12) / (36) Pages</p>	
---	--	---	--

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

 CTK Co., Ltd. <small>The Prime Leader of Global Regulatory Certification</small>	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-2020-04961-1 Page(13) / (36) Pages	
---	---	---	--

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(Ø 158 mm by 496.4 mm, Ø 6 mm by 18.9 mm * 2, Ø 73 mm by 229.4 mm,
 Ø 2.9 mm by 9.2 mm * 3, Ø 5.4 mm by 17 mm * 3)

Test Duration = 141 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
XNP-9250R	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-SW2	Stop Watch	0.01 s	CASIO/ NONE	2019-04-03	2021-04-03
S1-D09	Steel Measuring Tape	5 m	KOMELON/KMC-74N	2019-02-25	2021-02-25
S3-IP23	Area flowmeter	250LPM	Nuri tech/ Z-6504	2020-07-22	2021-07-22
S1-D03	DIGITAL VERNIER CALIPER	200 mm	MITUTOYO/200 mm	2020-03-26	2021-03-26



CTK Co., Ltd.

The Prime Leader of Global Regulatory Certification

CTK Co., Ltd.

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

Tel: +82-31-339-9970

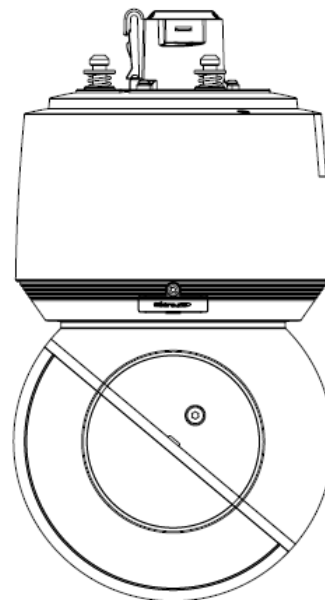
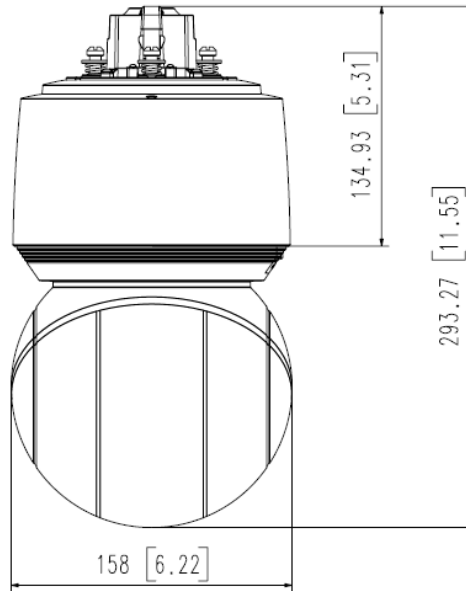
Fax: +82-31-624-9501

Report No.:

CTK-2020-04961-1

Page(14) / (36) Pages

Attachment 1 – Construction Diagram and installation method





CTK Co., Ltd.

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

Tel: +82-31-339-9970

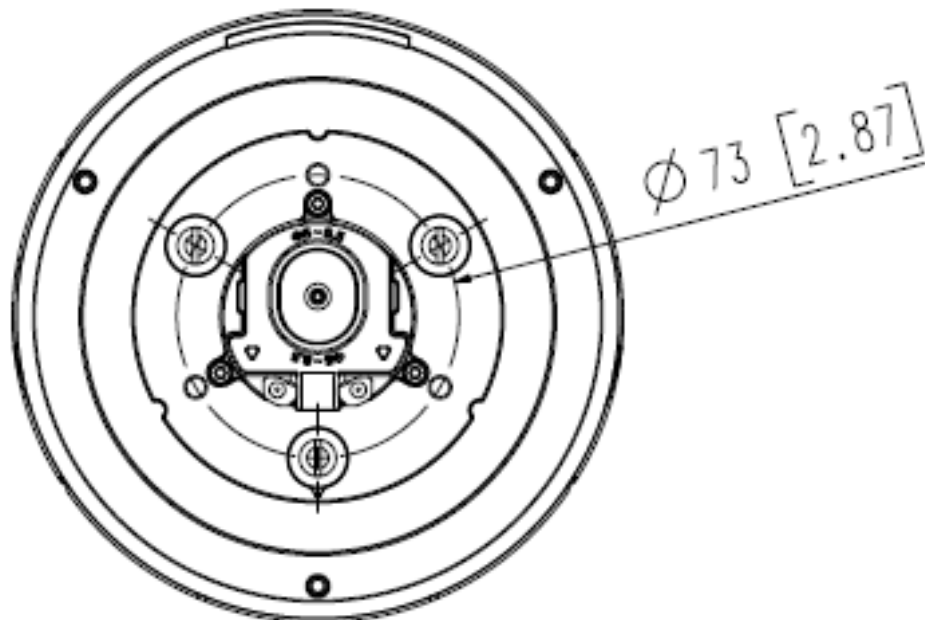
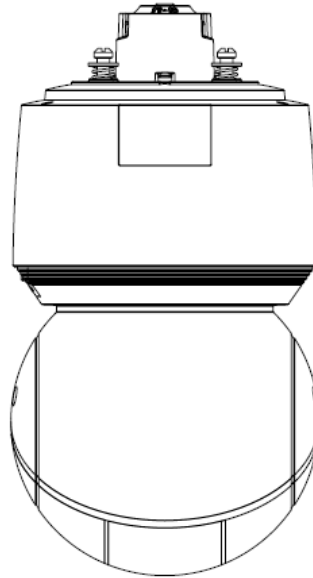
Fax: +82-31-624-9501

Report No.:

CTK-2020-04961-1

Page(15) / (36) Pages

Attachment 1 – Construction Diagram and installation method





CTK Co., Ltd.

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

Tel: +82-31-339-9970

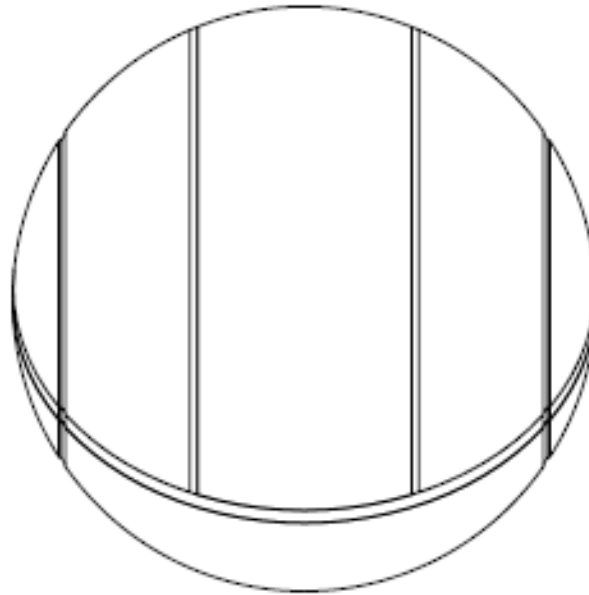
Fax: +82-31-624-9501

Report No.:

CTK-2020-04961-1

Page(16) / (36) Pages

Attachment 1 – Construction Diagram and installation method





CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

CTK Co., Ltd.

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

Tel: +82-31-339-9970

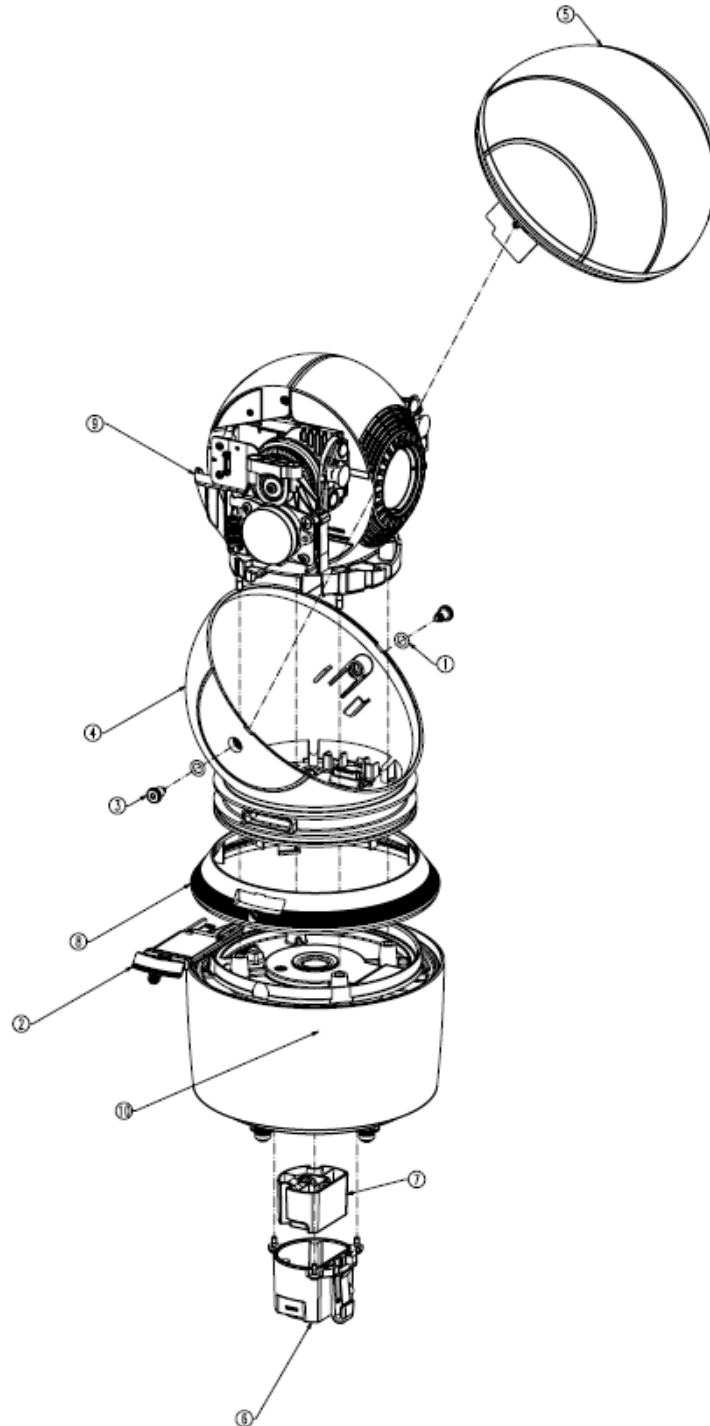
Fax: +82-31-624-9501

Report No.:

CTK-2020-04961-1

Page(17) / (36) Pages

Attachment 2 – Parts List





CTK Co., Ltd.
The Prime Leader of Global Regulatory Certification

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-2020-04961-1

Page(18) / (36) Pages

Attachment 2 – Parts List

NO.	PART NO.	PART NAME	Spec	Q'TY
1	FC18-004 793A	O-RING_PNM-9320VQP_D1-B .5_D2_1.8		2
2	73687	ASSY-SD-SLOT		1
3	FC18-005 723A	SCREW-SPECIAL-M4		2
4	77123	ASSY CASE DOME_XNP-XX00R		1
5	72821	ASSY-DOME-CLEAR-9300R		1
6	71176	Assy cover bush_PNP-Axx00RW		1
7	FC15-007 852A	Cover guide for RJ45 jack_XNP-xx00RW		1
8	FC15-007 804A	COVER PAN		1
9	77150	ASSY TILT MECHA XNP-XX00R		1
10	78568	ASSY MECHA PAN		1



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-2020-04961-1

Page(19) / (36) Pages

Attachment 2 – Parts List

품번	품명	규격
FC05-001526A	BASE-PAN;ADC12	ADC12 / ~ Chromate
MC03-004396A	Bearing-6807ZZ	6807ZZ
FC09-011406A	BRACKET-PAN BASE	ADC12 / ~ Chromate
MC03-004236A	Bearing-6806-25R	6806-25R
FC09-011447A	Bracket-Pan-Spacer	A6061 가공
FC10-001191A	RUBBER,RING-PAN_SPACER	Silicone rubber, 50HsA / Red 032 C
FC09-011408A	BRACKET-PAN MOUNT	ADC12 / ~ Chromate
MC11-005745A	Gear-PT_RW	POM (FT2020, White)
Z6001053501A	Screw machine	BH, M3xL6
FC18-000335A	Screw machine	PH, M4xL10
EP10-001234A	MAGNET-ABSOLUTE-32P	32P, Absolute
Z6001053501A	Screw machine	BH, M3xL6
MC05-001054A	BELT,TIMING-60S2M,242	Bando 60-S2M-242
FC09-011413A	Bracket-Motor-Base	SUS304 T1.5
EP08-002318A	Motor STH-42C2010	Shinano STH-42C2010
FC09-011412A	Bracket-Motor-Mover	SUS304 T1.5
Z6001053501A	Screw machine	BH, M3xL6
Z6001045901A	Screw machine	PH, M3xL6
FC38-001250A	500	SUS304WPB
FC39-006114A	FRAME-MECHA	ADC12 / ~ Chromate
FC18-005577A	O-ring_D1 142.47-D2 3.53	Silicone rubber, 60HsA / Sky Blue 306 C
Z6001053501A	Screw machine	BH, M3xL6
FC39-006418A	Body	ADC12 / ~ WHT 분체도장 + 인쇄
HP07-001528A	Gasket for cover bush	Silicone rubber, 70HsA / Orange 021U
MC19-003222A	Shaft guide	SUS304 가공
FC38-001245A	Spring for shaft	SUS304WPB
FC18-005575A	Washer plain	SUS304, ID8.4 x OD15.5
HP07-001529A	Gasket for shaft	Silicone rubber, 60HsA / Cool Grey 10
FC10-001206A	RUBBER-SLIP RING	Silicon Rubber OUTER DIA Φ26.4
Z6001053501A	SCREW-MACHINE;6001-001476,BH,+,M3,L6,Ni	
FC28-002038	FINGER-IDFG-0020-3P-33;NICKEL	
MC03-004418A	BEARING,BALL-6800ZZ;1Q,19,5	
EP08-003531A	MOTOR,STEP-STH-36C0068-01GA	
Z6003019601A	SCREW-TAPTYPE;6003-001438,BH,+,B,M2,L6,	Z9761204007 검토
MC05-001056A	TIMING BELT-0040;S1.5M,16S,1.5,4 1.12	
FC39-006251A	FRAME LENS	ADC 12
MC19-003264A	SHAFT GEAR	A6061BE
MC19-003265A	SHAFT CABLE	A6061BE
MC11-005831A	GEAR TILT	FT2020
Z6001053501A	SCREW-MACHINE;6001-001476,BH,+,M3,L6,Ni	
EP10-001234A	MAGNET-ABSOLUTE-32P	32P, Absolute
Z6001041102A	MACHINE SCREW B	



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-2020-04961-1

Page(20) / (36) Pages

Attachment 2 – Parts List

FC18-005714A	WASHER FLAT	SECC T1.0 3.1_13.1
Z6001053501A	SCREW-MACHINE;6001-001476,BH,+,M3,L6,Ní	
FC18-005722A	RING,C-SNAP;10,9,3,1	
FC29-013255A	GUARD CABLE	SILICON RUBBER
FC38-001267A	SPRING,EXT-TILT-XNP-XX00R;SWP	
FC29-013392A	HOLDER-TILT-XNP-XX00R	
FC09-011891A	BRACKET,MOTOR-TITL-XNP-XX00R;T 1.2	
FC09-011892A	BRACKET-TILT-MAIN-XNP-XX00R	
FC18-004952A	SCREW,TAPTITE-M3;SPECIAL,0.5,8,Ní	
Z6003012501A	4748_TAPTITE_SCREW_M3_L6	
Z6001053501A	SCREW-MACHINE;6001-001476,BH,+,M3,L6,Ní	
Z6009004401A	M4_SCREW_3760	
Z6003013801A	SCREW-TAPTYPE;6003-000282,BH,+,B,M3,L	
Z6001055101A	SCREW-MACHINE;6001-001707,BH,+,M2,L4,ZP	
FC15-007805A	COVER LENS R	PC(BLACK)
FC43-001013A	WEIGHT,COUNTER-BALANCE-XNP-XX00R;ZND	
RM04-001030A	TAPE-FILAMENT;#8915,T0.15MM,W12MM,L	
FC28-003200A	PAD-THERMAL;XNP-9300R,1.2T	
Z9642208007	MACHINE SCREW(M2xL8,Zn-B,PAN HEAD)	
FC29-013243A	CASE DOME	PC COVESTRO Makrolon 2407450601
FC30-007126A	PLATE INTERFACE PAN	PC+GF20 3500G20
FC18-005713A	O RING 114	Silicon Rubber D2.62*INNER DIA Φ114
Z6003013801A	SCREW-TAPTYPE;6003-000282,BH,+,B,M3,L	
AM07-014438A	ASSY COVER DOME	3201A+7794A+6250A
FC28-003201A	INSERT ISOLATOR	PC(SABIC LEXAN EXL9330 BK1A068)
FC15-007794A	COVER DOME	IR:PC COVESTRO Makrolon 2407450601/ Clear window:PC Mitsubish 2000VUR
FC39-006250A	FRAME DOME	PC(SABIC LEXAN EXL9330 BK1A068)
FC09-011768A	BRACKET DOME	SECC T1.6
FC10-001205A	RUBBER-BRKT BTM	Silicon Rubber D2.62*INNER DIA Φ145.7
Z6003013801A	SCREW-TAPTYPE;6003-000282,BH,+,B,M3,L	
FC15-007815A	COVER-SD-SLOT	PC V0 HN-1068 K21441 (BLK)
HP07-001571A	GASKET-SD	Silicon Rubber INNER 28.9*3.9*Φ1.78
Z6003022301A	M17_3MM_TAP_BINDHEAD	
FC36-001409A	SHEET-SD-BTM	PC SHEET(0.5t)+ADHESIVE TAPE(0.2t)
FC18-005781A	SCREW M3L7 INSTALL	SWCH18A(38Zn) TORX10
FC15-007804A	COVER PAN	PC V0 HN-1068 K21441 (BLK)+INSERT
FC15-007806B	COVER-LENS FRONT;XNP-XX00R	PC(BLACK)
Z6003022301A	M17_3MM_TAP_BINDHEAD	
EP10-001252A	ISOLATOR IR L	PC NH 1035 K2261
EP10-001253A	ISOLATOR IR R	PC NH 1035 K2261
FC18-005723A	SPECIAL SCREW M4	ALLOY BLACK(SWCH 18A, 흑색니켈합금 TORX T20, MACHINE M4.0 PITCH0.7
FC18-004793A	O-RING-PNM-9320V;P;D1-8.5_D2_2.0	

**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-2020-04961-1

Page(21) / (36) Pages

Attachment 2 – Parts List

HP06-001320A	VENT-GORE-VE90510	
FC15-007604A	Cover bush	ADC12 / ~ WHT 분체도장
FC38-001247A	Spring plate for safety wire	SUS304CSP 1/2H
FC18-004468A	Screw machine	Torx T6, M2xL5
FC18-001418A	Screw machine	Torx T??, M3xL8
MC06-001150A	Bushing cable	Silicone rubber, 60HsA / Tranparent
FC15-007852A	COVER-GUIDE FOR RJ45 JACK_XNP-XX00RW	



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-2020-04961-1

Page(22) / (36) Pages

Attachment 2 – Parts List

2020. 5. 20.

2407 + (z)(f1) Yellow Card | E41613

(<https://www.ulprospector.com?f=true>)

Home (<https://www.ulprospector.com?f=true>) / Plastics (<https://plastics.ulprospector.com>)

/ Yellow Cards (/certifications)

/ COVESTRO DEUTSCHLAND AG [PC RESINS] (/certifications/669/covestro-deutschland-ag-pc-resins)

/ Makrolon 2407 + (z)(f1) - Datasheet

Component - Plastics

File Number: E41613

COVESTRO DEUTSCHLAND AG [PC RESINS]



Chempark

2407 + (z)(f1)

Polycarbonate (PC)

-- (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.

Create your free Prospector account to view this complete UL Yellow Card. A free account includes access to thousands of detailed Yellow Cards.

[CREATE YOUR FREE ACCOUNT \(HTTPS://WWW.ULPROSPECTOR.COM/EN/SOLID-MATERIALS\)](https://www.ulprospector.com/en/solid-materials)

Flammability	Nominal Value Unit	Test Method
Flame Rating		
0,11 in, ALL		UL 94
0,12 in, ALL		UL 94
0,24 in, ALL		UL 94
0,030 in, ALL		UL 94, IEC 60695-11-10, -20
0,06 to 0,10 in, ALL		UL 94, IEC 60695-11-10, -20
0,12 in, ALL		IEC 60695-11-10, -20
0,24 in, ALL		IEC 60695-11-10, -20
0,11 in, ALL		IEC 60695-11-10, -20
Electrical	Nominal Value Unit	Test Meth
Hot-wire Ignition (HWI)		UL 746
0,06 to 0,10 in		
0,11 in		
0,12 in		
0,24 in		



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-2020-04961-1

Page(23) / (36) Pages

Attachment 2 – Parts List


2020. 5. 20.

2407 + (z)(f1) Yellow Card | E41813

0,24 in		
High Amp Arc Ignition (HAI)		UL 746
0,06 to 0,10 in		
0,11 in		
0,12 in		
0,24 in		
Comparative Tracking Index (CTI)		UL 746
Dielectric Strength	V/mil	ASTM D149, IEC 60243-1
High Voltage Arc Tracking Rate (HVTR)		UL 746
Volume Resistivity	ohms-cm	ASTM D257, IEC 60093
Arc Resistance		ASTM D495
Thermal	Nominal Value Unit	Test Method
RTI Elec		UL 746
0,030 in	°F	
0,06 to 0,10 in	°F	
0,11 in	°F	
0,12 in	°F	
0,24 in	°F	
RTI Imp		UL 746
0,030 in	°F	
0,06 to 0,10 in	°F	
0,11 in	°F	
0,12 in	°F	
0,24 in	°F	
RTI Str		UL 746
0,030 in	°F	
0,06 to 0,10 in	°F	
0,11 in	°F	
0,12 in	°F	
0,24 in	°F	
Physical	Nominal Value Unit	Test Method
Dimensional Stability	%	ASTM D1042, ISO 2796
Outdoor Suitability		UL 746C

UL and the UL logo are trademarks of UL LLC © 2020. All Rights Reserved.

The information presented here is provided by UL from the producer of the product or material or original information provided. However, UL assumes no responsibility or liability for the accuracy of the information contained on this website and strongly encourages that upon final product or material selection information is validated with the manufacturer. This website provides links to other websites owned by third parties. The content of such third party sites is not within our control, and we cannot and will not take responsibility for the information or content.

 <p>CTK Co., Ltd. The Prime Leader of Global Regulatory Certification</p>	<p>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</p>	<p>Report No.: CTK-2020-04961-1 Page(24) / (36) Pages</p>	
---	--	---	--

Attachment 2 – Parts List

2020. 5. 20.

2407 + (z)(f1) Yellow Card | E41813

≡ About

≡ Raw Materials & Ingredients

≡ Solid Materials

UL is a global independent safety science company offering expertise in certification, validation, testing, inspections, auditing, education and advisory services. Our breadth, established objectivity and proven history mean we are a symbol of trust and enable us to help provide peace of mind to all.

Learn More (<http://www.ul.com/aboutul/>)

UL and the UL logo are trademarks of UL LLC ©2020 All Rights Reserved.

Terms & Conditions (<https://www.ulprospector.com/en/terms>) | Privacy Policy (<https://www.ulprospector.com/en/privacy>)

Cookies on UL

We use cookies to personalize content and ads, to provide social media features and to analyze our traffic. We also share information about your use of our site with our social media, advertising and analytics partners.. [Learn More](https://www.ul.com/customer-resources/online-policies/about-cookies/) (<https://www.ul.com/customer-resources/online-policies/about-cookies/>)

> [Cookie Settings](#)

✓ Accept



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-2020-04961-1
Page(25) / (36) Pages

Attachment 2 – Parts List

2020. 5. 20.

EXL9330(GG)(X)(f1)(B1)(IP) Yellow Card | E121562



(<https://www.ulprospector.com?f=true>)

Home (<https://www.ulprospector.com?f=true>) / Plastics (<https://plastics.ulprospector.com>)
/ Yellow Cards (/certifications)
/ SABIC INNOVATIVE PLASTICS US L L C (/certifications/3305/sabic-innovative-plastics-us-l-l-c)
/ Lexan EXL9330(GG)(X)(f1)(B1)(IP) - Datasheet

Component - Plastics

File Number: E121562

SABIC INNOVATIVE PLASTICS US L L C

AMERICAS - RESIN

EXL9330(GG)(X)(f1)(B1)(IP)

PC/Siloxane



- (B1) Represents colour code BK1E526 and BK1E649
- (f1) Suitable for outdoor use with respect to exposure to Ultraviolet Light, Water Exposure and Immersion in accordance with UL 746C.
- (GG) Denotes a global grade formulation previously in File E161759.
- (X) All colors except Natural.
- B1 Represents color code BK1E526, BK1E649 and BK1E519
- IP Inclined Plane Tracking per UL746A, average time to track at 1.5 kV is 60+ minutes.
- NOTE Material designation may be followed by a color nomenclature consisting of either an alpha/numeric or numeric/alpha combination.

Create your free Prospector account to view this complete UL Yellow Card. A free account includes access to thousands of detailed Yellow Cards.

[CREATE YOUR FREE ACCOUNT \(HTTPS://WWW.ULPROSPECTOR.COM/EN/SOLID-MATERIALS\)](https://www.ulprospector.com/en/solid-materials)

Flammability	Nominal Value Unit	Test Method
Flame Rating		
0.028 in, ALL		UL 94
0.031 in, (B1)		UL 94
0.06 in, (X)		UL 94, IEC 60695-11-10, -20
0.08 in, (X)		UL 94, IEC 60695-11-10, -20
0.09 in, (X)		UL 94, IEC 60695-11-10, -20
0.10 in, BK-G		UL 94, IEC 60695-11-10, -20
0.12 in, (X)		UL 94, IEC 60695-11-10, -20
0.028 in, ALL		IEC 60695-11-10, -20



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-2020-04961-1

Page(26) / (36) Pages

Attachment 2 – Parts List

2020. 5. 20.

EXL9330(GG)(X)(f1)(B1)(IP) Yellow Card | E121562

0.03 in, (B1)		IEC 60695-11-10, -20
Glow Wire Flammability Index		IEC 60695-2-12
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	
Glow Wire Ignition Temperature		IEC 60695-2-13
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	
Electrical	Nominal Value Unit	Test Method
Hot-wire Ignition (HWI)		UL 746
0.024 in		
0.025 in		
0.028 in		
0.03 in		
0.04 in		
0.06 in		
0.08 in		
0.09 in		
0.10 in		
0.12 in		
High Amp Arc Ignition (HAI)		UL 746
0.024 in		
0.025 in		
0.028 in		
0.03 in		
0.04 in		
0.06 in		
0.08 in		
0.09 in		
0.10 in		
0.12 in		



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-2020-04961-1

Page(27) / (36) Pages

Attachment 2 – Parts List

2020. 5. 20.

EXL9330(GG)(X)(F1)(B1)(IP) Yellow Card | E121562

0.12 in		
Comparative Tracking Index (CTI)		UL 746
Dielectric Strength	V/mil	ASTM D149, IEC 60243-1
Inclined-Plane Tracking	kV	ASTM D2303
Volume Resistivity	ohms-cm	ASTM D257, IEC 60093
Thermal	Nominal Value Unit	Test Method
RTI Elec		UL 746
0.024 in	°F	
0.025 in	°F	
0.028 in	°F	
0.031 in	°F	
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	
RTI Imp		UL 746
0.024 in	°F	
0.025 in	°F	
0.028 in	°F	
0.031 in	°F	
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	
RTI Sp		UL 746
0.024 in	°F	
0.025 in	°F	
0.028 in	°F	
0.031 in	°F	
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	
RTI Sp		UL 746
0.024 in	°F	
0.025 in	°F	
0.028 in	°F	
0.031 in	°F	
0.04 in	°F	
0.06 in	°F	
0.08 in	°F	
0.09 in	°F	
0.10 in	°F	
0.12 in	°F	

Attachment 2 – Parts List

2020. 5. 20.		EXL9330(GG)(X)(f1)(B1)(IP) Yellow Card | E121562	
0.09 in		°F	
0.10 in		°F	
0.12 in		°F	
Physical	Nominal Value	Unit	Test Method
Dimensional Stability		%	ASTM D1042, ISO 2796
Outdoor Suitability			UL 746C

UL and the UL logo are trademarks of UL LLC © 2020. All Rights Reserved.

The information presented here was acquired by UL from the producer of the product or material or original information provider. However, UL assumes no responsibility or liability for the accuracy of the information contained on this website and strongly encourages that upon final product or material selection information is validated with the manufacturer. This website provides links to other websites owned by third parties. The content of such third party sites is not within our control, and we cannot and will not take responsibility for the information or content.

About

Raw Materials & Ingredients

Solid Materials

UL is a global independent safety science company offering expertise in certification, validation, testing, inspections, auditing, education and advisory services. Our breadth, established objectivity and proven history mean we are a symbol of trust and enable us to help provide peace of mind to all.

Learn More (<http://www.ul.com/aboutul/>)

UL and the UL logo are trademarks of UL LLC ©2020 All Rights Reserved.

Terms & Conditions (<https://www.ulprospector.com/en/terms>) | Privacy Policy (<https://www.ulprospector.com/en/privacy>)

Cookies on UL

We use cookies to personalize content and ads, to provide social media features and to analyze our traffic. We also share information about your use of our site with our social media, advertising and analytics partners. [Learn More](https://www.ul.com/customer-resources/online-policies/about-cookies/) (<https://www.ul.com/customer-resources/online-policies/about-cookies/>)

> [Cookie Settings](#)

✓ Accept



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-2020-04961-1

Page(29) / (36) Pages

Attachment 2 – Parts List



Component - Plastics

File Number: E115797

LOTTE CHEMICAL CORPORATION

56 GOSAN-RO

UIWANG-SI, GYEONGGI-DO 16073 Republic of Korea

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 60695-2-12
1.5 mm	960 °C	
3.0 mm	960 °C	
Glow Wire Ignition Temperature		IEC 60695-2-13
1.5 mm	825 °C	
3.0 mm	825 °C	
Electrical	Value	Test Method
Hot-wire Ignition (HWI) (1.5 mm)	PLC 3	UL 746
High Amp Arc Ignition (HAI) (1.5 mm)	PLC 3	UL 746
Comparative Tracking Index (CTI)	PLC 3	UL 746
Dielectric Strength	32 kV/mm	ASTM D149 IEC 60243-1
Volume Resistivity	1.0E+17 ohms-cm	ASTM D257 IEC 60093
Thermal	Value	Test Method
RTI Elec		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
RTI Imp		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
RTI Str		UL 746
1.5 mm	130 °C	
3.0 mm	130 °C	
Ball Pressure Test (130°C, 3.00 mm)	Pass	IEC 60695-10-2
Physical	Value	Test Method
Outdoor Suitability	f1	UL 746C



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-2020-04961-1

Page(30) / (36) Pages

Attachment 2 – Parts List



LEXANTM COPOLYMER EXL9330

REGION ASIA

DESCRIPTION

Opaque PC-Siloxane copolymer with excellent processability. Non-chlorinated, non-brominated flame retardant product in most colors. UV-stabilized. UL rated FI V-0/5VA.

TYPICAL PROPERTY VALUES

Revision 20190718

PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
MECHANICAL			
Tensile Stress, yld, Type I, 50 mm/min	58	MPa	ASTM D 638
Tensile Stress, brk, Type I, 50 mm/min	61	MPa	ASTM D 638
Tensile Strain, yld, Type I, 50 mm/min	6	%	ASTM D 638
Tensile Strain, brk, Type I, 50 mm/min	130	%	ASTM D 638
Tensile Modulus, 50 mm/min	2100	MPa	ASTM D 638
Flexural Stress, yld, 1.3 mm/min, 50 mm span	88	MPa	ASTM D 790
Flexural Modulus, 1.3 mm/min, 50 mm span	2060	MPa	ASTM D 790
Tensile Stress, yield, 50 mm/min	55	MPa	ISO 527
Tensile Stress, break, 50 mm/min	60	MPa	ISO 527
Tensile Strain, yield, 50 mm/min	6	%	ISO 527
Tensile Strain, break, 50 mm/min	125	%	ISO 527
Tensile Modulus, 1 mm/min	2100	MPa	ISO 527
Flexural Stress, yield, 2 mm/min	85	MPa	ISO 178
Flexural Modulus, 2 mm/min	2200	MPa	ISO 178
Ball Indentation Hardness, H358/30	90	MPa	ISO 2039.1
IMPACT			
Izod Impact, notched, 23°C	801	J/m	ASTM D 256
Izod Impact, notched, -30°C	678	J/m	ASTM D 256
Izod Impact, notched, -50°C	587	J/m	ASTM D 256
Izod Impact, notched, 23°C, 6.4mm	640	J/m	ASTM D 256
Izod Impact, double-gated, 23°C	1068	J/m	SABIC method
Instrumented Impact Total Energy, 23°C	52	J	ASTM D 3763
Izod Impact, unnotched 80°10°3 +23°C	NB	kJ/m ²	ISO 180/1U
Izod Impact, unnotched 80°10°3 -30°C	NB	kJ/m ²	ISO 180/1U
Izod Impact, notched 80°10°3 +23°C	70	kJ/m ²	ISO 180/1A
Izod Impact, notched 80°10°3 -30°C	55	kJ/m ²	ISO 180/1A
Izod Impact, notched 63.5°12.7°3.2, 23°C	80	kJ/m ²	ISO 180/4A
Izod Impact, notched 63.5°12.7°3.2, -30°C	65	kJ/m ²	ISO 180/4A
Charpy 23°C, V-notch Edgew 80°10°3 sp=62mm	75	kJ/m ²	ISO 179/1eA
Charpy -30°C, V-notch Edgew 80°10°3 sp=62mm	60	kJ/m ²	ISO 179/1eA
Charpy 23°C, Unnotch Edgew 80°10°3 sp=62mm	NB	kJ/m ²	ISO 179/1eU
Charpy -30°C, Unnotch Edgew 80°10°3 sp=62mm	NB	kJ/m ²	ISO 179/1eU
THERMAL			
Vicat Softening Temp, Rate 8/50	142	°C	ASTM D 1525

© 2019 Copyright by SABIC. All rights reserved

CHEMISTRY THAT MATTERS[™]



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-2020-04961-1

Page(31) / (36) Pages

Attachment 2 – Parts List



PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
HDT, 0.45 MPa, 3.2 mm, unannealed	134	°C	ASTM D 648
HDT, 1.82 MPa, 3.2mm, unannealed	120	°C	ASTM D 648
HDT, 1.82 MPa, 6.4 mm, unannealed	124	°C	ASTM D 648
CTE, -40°C to 40°C, flow	6.66E-05	1/°C	ASTM E 831
CTE, -40°C to 40°C, xflow	6.66E-05	1/°C	ASTM E 831
CTE, 23°C to 80°C, flow	7.2E-05	1/°C	ISO 11359-2
CTE, 23°C to 80°C, xflow	7.7E-05	1/°C	ISO 11359-2
Ball Pressure Test, 125°C +/- 2°C	PASSES	-	IEC 60695-10-2
Vicat Softening Temp, Rate B/50	140	°C	ISO 306
Vicat Softening Temp, Rate B/120	142	°C	ISO 306
HDT/Be, 0.45MPa Edgew 120*10*4 sp=100mm	135	°C	ISO 75/Be
HDT/Ae, 1.8 MPa Edgew 120*10*4 sp=100mm	124	°C	ISO 75/Ae
Relative Temp Index, Elec ⁽¹⁾	125	°C	UL 746B
Relative Temp Index, Mech w/impact ⁽¹⁾	115	°C	UL 746B
Relative Temp Index, Mech w/o impact ⁽¹⁾	125	°C	UL 746B
PHYSICAL			
Specific Gravity	1.18	-	ASTM D 792
Mold Shrinkage, flow, 3.2 mm	0.4 – 0.8	%	SABIC method
Mold Shrinkage, xflow, 3.2 mm	0.4 – 0.8	%	SABIC method
Melt Flow Rate, 300°C/ 1.2 kgf	10	g/10 min	ASTM D 1238
Density	1.19	g/cm³	ISO 1183
Water Absorption, (23°C/sat)	0.35	%	ISO 62
Moisture Absorption (23°C / 50% RH)	0.15	%	ISO 62
Melt Volume Rate, MVR at 300°C/1.2 kg	9	cm³/10 min	ISO 1133
ELECTRICAL			
Dielectric Strength, in oil, 3.2 mm	17	kV/mm	ASTM D 149
Relative Permittivity, 50/60 Hz	2.95	-	ASTM D 150
Relative Permittivity, 1 MHz	2.9	-	ASTM D 150
Dissipation Factor, 50/60 Hz	0.0024	-	ASTM D 150
Dissipation Factor, 1 MHz	0.0085	-	ASTM D 150
Volume Resistivity	>1.E+15	Ohm-cm	IEC 60093
Surface Resistivity, ROA	>1.E+15	Ohm	IEC 60093
Dielectric Strength, in oil, 3.2 mm	16	kV/mm	IEC 60243-1
Relative Permittivity, 1 MHz	2.7	-	IEC 60250
Dissipation Factor, 50/60 Hz	0.001	-	IEC 60250
Dissipation Factor, 1 MHz	0.0085	-	IEC 60250
Comparative Tracking Index	225	V	IEC 60112
Relative Permittivity, 50/60 Hz	2.6	-	IEC 60250
Comparative Tracking Index (UL) (PLC)	3	PLC Code	UL 746A
Hot-Wire Ignition (HWI), PLC 1	≥3	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 2	≥1.5	mm	UL 746A
Hot-Wire Ignition (HWI), PLC 3	≥0.6	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 0	≥2.3	mm	UL 746A
High Amp Arc Ignition (HAI), PLC 1	≥0.6	mm	UL 746A
FLAME CHARACTERISTICS ⁽¹⁾			



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-2020-04961-1

Page(32) / (36) Pages

Attachment 2 – Parts List



PROPERTIES	TYPICAL VALUES	UNITS	TEST METHODS
UL Yellow Card Link	<u>F207780-102516601</u>	-	-
UL Yellow Card Link 2	<u>F207780-228378</u>	-	-
UL Recognized, 94-5VA Flame Class Rating	≥3	mm	UL 94
UL Recognized, 94-5VB Flame Class Rating	≥2.5	mm	UL 94
UL Recognized, 94V-0 Flame Class Rating	≥1.5	mm	UL 94
UL Recognized, 94V-1 Flame Class Rating	≥0.8	mm	UL 94
UL Recognized, 94HB Flame Class Rating	≥0.6	mm	UL 94
Glow Wire Ignitability Temperature, 3.0 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.5 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.3 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 2.0 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.5 mm	825	°C	IEC 60695-2-13
Glow Wire Ignitability Temperature, 1.0 mm	825	°C	IEC 60695-2-13
Glow Wire Flammability Index, 3.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.3 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 2.0 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.5 mm	960	°C	IEC 60695-2-12
Glow Wire Flammability Index, 1.0 mm	960	°C	IEC 60695-2-12
Oxygen Index (LOI)	35	%	ISO 4589
UV-light, water exposure/immersion	F1	-	UL 746C
INJECTION MOLDING			
Drying Temperature	120	°C	
Drying Time	3 ~ 4	hrs	
Drying Time (Cumulative)	48	hrs	
Maximum Moisture Content	0.02	%	
Melt Temperature	265 ~ 315	°C	
Nozzle Temperature	260 ~ 310	°C	
Front - Zone 3 Temperature	265 ~ 315	°C	
Middle - Zone 2 Temperature	255 ~ 305	°C	
Rear - Zone 1 Temperature	245 ~ 295	°C	
Mold Temperature	70 ~ 95	°C	
Back Pressure	0.3 ~ 0.7	MPa	
Screw Speed	40 ~ 70	rpm	
Shot to Cylinder Size	40 ~ 60	%	
Vent Depth	0.025 ~ 0.076	mm	

(1) UL Ratings shown on the technical datasheet might not cover the full range of thicknesses and colors. For details, please see the UL Yellow Card.

DISCLAIMER

Any sale by SABIC, its subsidiaries and affiliates (each a "seller"), is made exclusively under seller's standard conditions of sale (available upon request) unless agreed otherwise in writing and signed on behalf of the seller. While the information contained herein is given in good faith, SELLER MAKES NO WARRANTY, EXPRESS OR IMPLIED, INCLUDING MERCHANTABILITY AND NON-INFRINGEMENT OF INTELLECTUAL PROPERTY, NOR ASSUMES ANY LIABILITY, DIRECT OR INDIRECT, WITH RESPECT TO THE PERFORMANCE, SUITABILITY OR FITNESS FOR INTENDED USE OR PURPOSE OF THESE PRODUCTS IN ANY APPLICATION. Each customer must determine the suitability of seller materials for the customer's particular use through appropriate testing and analysis. No statement by seller concerning a possible use of any product, service or design is intended, or should be construed, to grant any license under any patent or other intellectual property right.



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-2020-04961-1

Page(33) / (36) Pages

Attachment 2 – Parts List

Iupilon® S-2000

Polycarbonate

Mitsubishi Engineering-Plastics Corp

PROSPECTOR®

www.uprospector.com

Technical Data

Product Description

Iupilon® S-2000 is a Polycarbonate (PC) material. It is available in Asia Pacific, Europe, or North America for injection molding. Primary attribute of Iupilon® S-2000: Medium Viscosity.

Typical application of Iupilon® S-2000: Automotive

General

Material Status	• Commercial: Active
Literature ¹	• Technical Datasheet (English)
UL Yellow Card ²	• E41179-231000
Search for UL Yellow Card	• Mitsubishi Engineering-Plastics Corp • Iupilon®
Availability	• Asia Pacific • Europe • North America
Features	• Medium Viscosity
Forms	• Pellets
Processing Method	• Injection Molding

Physical	Nominal Value Unit	Test Method
Density	1.20 g/cm ³	ISO 1183
Melt Mass-Flow Rate (MFR) (300°C/1.2 kg)	10 g/10 min	ISO 1133
Melt Volume-Flow Rate (MVR) (300°C/1.2 kg)	9.00 cm ³ /10min	ISO 1133

Molding Shrinkage	
Across Flow : 3.20 mm	0.50 to 0.70 %
Flow : 3.20 mm	0.50 to 0.70 %
Water Absorption (Saturation, 23°C)	0.24 %

Mechanical	Nominal Value Unit	Test Method
Tensile Modulus	2400 MPa	ISO 527-2
Tensile Stress (Yield)	61.0 MPa	ISO 527-2
Tensile Strain (Yield)	5.6 %	ISO 527-2
Nominal Tensile Strain at Break	110 %	ISO 527-2
Flexural Modulus	2300 MPa	ISO 178
Flexural Stress	93.0 MPa	ISO 178

Impact	Nominal Value Unit	Test Method
Charpy Notched Impact Strength (23°C)	76 kJ/m ²	ISO 179
Charpy Unnotched Impact Strength (23°C)	No Break	ISO 179

Thermal	Nominal Value Unit	Test Method
Heat Deflection Temperature		
0.45 MPa, Unannealed	143 °C	ISO 75-2/B
1.8 MPa, Unannealed	129 °C	ISO 75-2/A

Flow	6.5E-5 cm/cm/°C
Transverse	6.6E-5 cm/cm/°C

Electrical	Nominal Value Unit	Test Method
Surface Resistivity	6.0E+15 ohms	IEC 60093
Volume Resistivity	3.0E+16 ohms-cm	IEC 60093
Electric Strength		IEC 60243-1
1.00 mm	31 kV/mm	
3.00 mm	18 kV/mm	
Relative Permittivity		IEC 60250
100 Hz	3.10	
1 MHz	3.10	

1 of 3



UL and the UL logo are trademarks of UL LLC © 2016. All Rights Reserved.
UL Prospector | 800-788-4668 or 307-742-0227 | www.uprospector.com

The information presented on this datasheet was acquired by UL Prospector from the producer of the material. UL Prospector makes substantial efforts to ensure the accuracy of this data. However, UL Prospector assumes no responsibility for the data values and strongly encourages that upon final material selection, data points are validated with the material supplier.

Form No. TDS-10540-en

Document Created: Wednesday, September 26, 2016
Added to Prospector: November 2000
Last Updated: 4/1/2014



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-2020-04961-1

Page(34) / (36) Pages

Attachment 2 – Parts List

Iupilon® S-2000

Polycarbonate

Mitsubishi Engineering-Plastics Corp

PROSPECTOR®

www.ulprospector.com

Electrical	Nominal Value Unit	Test Method
Dissipation Factor		IEC 60250
100 Hz	6.0E-4	
1 MHz	9.0E-3	
Comparative Tracking Index (CTI)	PLC 2	UL 746
Additional Information		
S-2000V(R): V-2		
S-2000R: Mold Release		
S-2000U(R): UV Stabilized		
S-2001(R): FDA compliant		
Injection	Nominal Value Unit	
Drying Temperature	120 °C	
Drying Time	4.0 to 8.0 hr	
Rear Temperature	260 to 280 °C	
Middle Temperature	270 to 290 °C	
Front Temperature	270 to 300 °C	
Nozzle Temperature	270 to 300 °C	
Mold Temperature	70 to 100 °C	
Injection Pressure	50.0 to 150 MPa	
Screw Speed	50 to 100 rpm	

Notes

¹ These links provide you with access to supplier literature. We work hard to keep them up to date; however you may find the most current literature from the supplier.

² A UL Yellow Card contains UL-verified flammability and electrical characteristics. UL Prospector continually works to link Yellow Cards to individual plastic materials in Prospector, however this list may not include all of the appropriate links. It is important that you verify the association between these Yellow Cards and the plastic material found in Prospector. For a complete listing of Yellow Cards, visit the UL Yellow Card Search.

³ Typical properties: these are not to be construed as specifications.



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-2020-04961-1

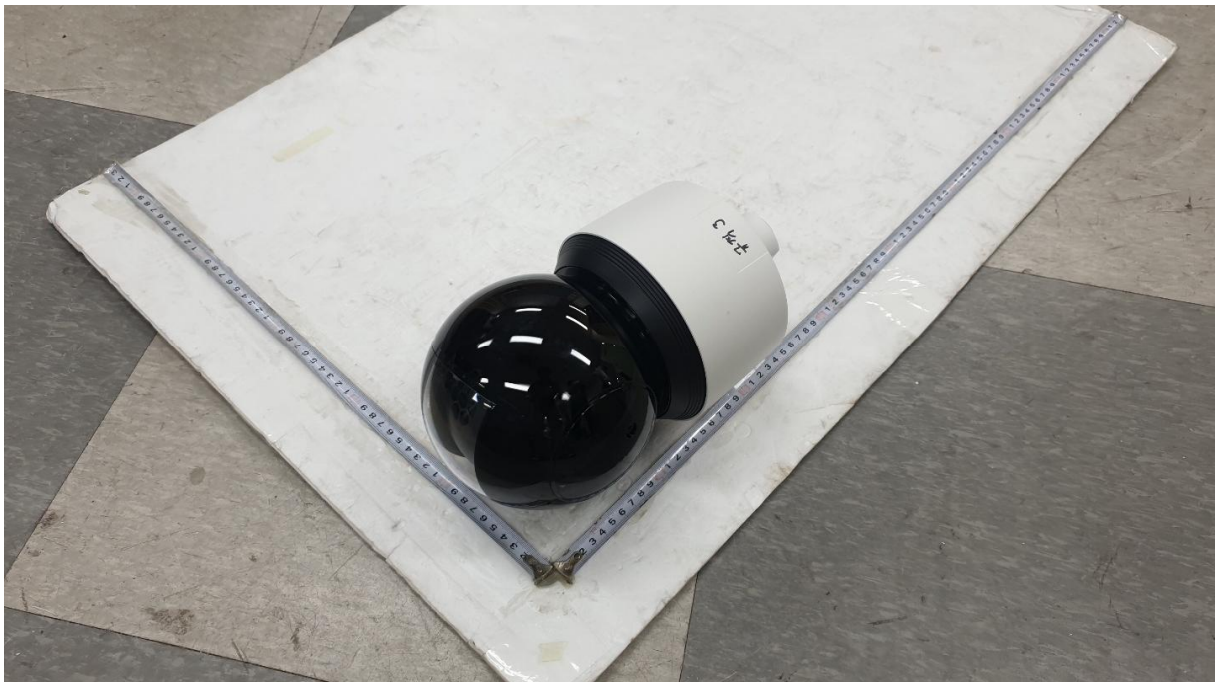
Page(35) / (36) Pages

Attachment 3 – Photographs

<Photo 1 > Test Unit



<Photo 2 > Test Unit





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-2020-04961-1

Page(36) / (36) Pages

Attachment 3 – Photographs

<Photo 3 > Hose down test



<Photo 4 > Test Result

