



File E158873

Vol X1

Authorization Page 1

Issued: 2004-05-11

Revised: 2023-05-02

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

INFORMATION TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS EQUIPMENT
(NWGQ, NWGQ7)

Manufacturer:	SEE ADDENDUM FOR MANUFACTURER LOCATIONS
Applicant: (813307-003)	105140 (Party Site) Hanwha Vision Co Ltd 6, Pangyo-ro 319beon-gil, Bundang-gu Seongnam-si Gyeonggi-do 13488 KR
Listee/Classified Company: (813307-003)	105140 (Party Site) SAME AS APPLICANT

Use of the Mark

This Follow-Up Service Procedure authorizes the above Manufacturer(s) to use the marking specified by UL LLC, or any authorized licensee of UL LLC, including the UL Contracting Party, only on products when constructed, tested and found to be in compliance with the requirements of this Follow-Up Service Procedure and in accordance with the terms of the applicable service agreement with UL Contracting Party. The UL Contracting Party for Follow-Up Services is listed in the addendum to this Follow-Up Service Procedure ("UL Contracting Party"). UL Contracting Party and UL LLC are referred to jointly herein as "UL."

It is the responsibility of the Applicant, Manufacturer(s), and Listee/Classified Company to make sure that only the products meeting the aforementioned requirements bear the authorized Marks of UL LLC, or any authorized licensee of UL LLC.

Additional Responsibilities

Additional responsibilities, duties and requirements for the Applicant and Manufacturers are defined under Additional Resources at the following website: <https://www.ul.com/fus>. Manufacturers without Internet access may obtain the current version of these documents from their local UL customer service representative or UL field representative. For assistance, or to obtain a paper copy of these documents or the Follow-Up Service Terms referenced below, please contact UL's Customer Service at <https://www.ul.com/aboutul/locations/>, select a location and enter your request, or call the number listed for that location.

Acceptance of Follow-Up Services

The Applicant and the specified Manufacturer(s) and any Listee/Classified Company in this Follow-Up Service Procedure must agree to receive Follow-Up Services from UL Contracting Party. If your applicable service agreement is a Global Services Agreement ("GSA"), the Applicant, the specified Manufacturer(s), and any Listee/Classified Company will be bound to a Service Agreement for Follow-Up Services upon the earliest by any Subscriber of a) use of the prescribed UL Mark, b) acceptance of the factory inspection, or c) payment of the Follow-Up Service fees. The Service Agreement incorporates such GSA, this Follow-Up Service Procedure and the Follow-Up Service Terms which can be accessed by clicking the following link: <https://www.ul.com/resources/contracts/follow-up-service-terms>. In all other events, Follow-Up Services will be governed by and incorporate the terms of your applicable service agreement and this Follow-Up Service Procedure.

Use and Ownership of the Follow-Up Service Procedure

This Follow-Up Service Procedure, and any subsequent revisions, is the property of UL and is not transferable. This Follow-Up Service Procedure contains confidential information for use only by the Applicant, the specified Manufacturer(s), and representatives of UL and is not to be used for any other purpose. It is provided to the Subscribers with the understanding

that it is not to be copied, either wholly or in part unless specifically allowed, and that it will be returned to UL, upon request.

Definition of Terms

Capitalized terms used but not defined herein have the meanings set forth in the GSA and the applicable Service Terms or any other applicable UL service agreement.

No Third Party Liability

UL shall not incur any obligation or liability for any loss, expense or damages, including incidental, consequential or punitive damages arising out of or in connection with the use or reliance upon this Follow-Up Service Procedure to anyone other than the above Manufacturer(s) as provided in the agreement between UL LLC or an authorized licensee of UL LLC, including UL Contracting Party, and the Manufacturer(s).

Certification Body

UL LLC has signed below solely in its capacity as the certification body to indicate that this Follow-Up Service Procedure fulfills the requirements for certification documentation issued by the certification body. The certification body's accreditation status for the applicable certification scheme and identification of the accreditation body can be found at <https://www.ul.com/resources/accreditation>.

Deborah Jennings-Conner
VP Regulatory Services
UL LLC

LOCATION

135422 (Party Site)
D-TECH CO LTD
173-25 Saneop-ro Gwonseon-gu
Suwon-si Gyeonggi-do 16648 KR
Factory ID: D
UL Contracting Party for above site is: UL GmbH

1846102 (Party Site)
HANWHA VISION VIETNAM COMPANY LIMITED
Lot O-2 Que Vo Industrial Zone extended area Nam Son Ward
Bac Ninh VN
Factory ID: V
UL Contracting Party for above site is: UL GmbH

1867779 (Party Site)
KEVIS Inc.
Building B 1307 IT-Valley, 17 Gosan-ro 148beon-gil
Gunpo-si, Gyeonggi-do 15850 KR
Factory ID: K
UL Contracting Party for above site is: UL GmbH



Multiple Listing Correlation Sheet

ML FILE NO. E178610

Issued: 2019-06-11
Revised: 2023-03-21

MULTIPLE LISTING
of
INFORMATION TECHNOLOGY EQUIPMENT INCLUDING ELECTRICAL BUSINESS
EQUIPMENT
(NWGQ, NWGQ7)
for

[549233] AMERICAN DYNAMICS, DIV OF
SENSORMATIC ELECTRONICS L L C

Basically Listed for:

[105140] HANWHA VISION CO LTD

Basically Listed products covered by Procedure and/or Reports under File No. E158873, Volume X1

Products Covered	Report Reference	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
NETWORK ENCODER	A232-UL	SPE-110A*	TYCE1C*
NETWORK VIDEO ENCODER	A222-UL	SPE-410A*	TYCE4C*

Note: * is Blank or N or P, N = NTSC, P = PAL.

MARKING: Same as that described in Follow-Up Service Procedure and/or Report except for Multiple Listee's name, file number, Trademark / Tradename, when applicable, and product designation. The Control Number remains 9T96.

LITERATURE: If literature is packaged with the Multiple Listed product(s) it shall be in compliance with the requirements outlined in the appropriate UL Standard(s).



Multiple Listing Correlation Sheet

ML FILE NO. E482654

Issued: 2022-11-30
Revised: 2023-03-21

MULTIPLE LISTING
of
AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT
(AZOT, AZOT7)
for

[1566244] QOGNIFY LTD

Basically Listed for:

[105140] HANWHA VISION CO LTD

MARKING: Same as that described in Follow-Up Service Procedure and/or Report except for Multiple Listee's name, file number, Trademark / Tradename, when applicable, and product designation. The Control Number remains 9T96.

LITERATURE: If literature is packaged with the Multiple Listed product(s) it shall be in compliance with the requirements outlined in the appropriate UL Standard(s).

Basically Listed products covered by Procedure and/or Reports under File No. E158873, Volume X13

Products Covered	Report Date	Basic Applicant's (Supplier's) Product Designation	Multiple Listee's Product Designation
NETWORK VIDEO ENCODER	A6125-UL	SPE-1630	NVE4016

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Product Type	Model/Type Reference	Report Reference #	Status
Digital Video Recorder	SVR-430	E158873-A2-UL	
Video Presenter	UF-80, UF-80DX, UF-80ST	E158873-A4-UL	
Video Presenter	SVP-5300N	E158873-A5-UL	
Video Presenter	SDP-900DXAN, SDP-950DXAN, SDP-950STAN	E158873-A6-UL	
Video Presenter	SDP-850, SDP-850DX	E158873-A9-UL	
Digital Video Recorder	SVR-1650, SVR-1650E, SVR-1640, SVR-1640E, SVR-950, SVR-950E and SVR-1640A	E158873-A11-UL	
Video Presenter	SDP-6500DXA	E158873-A12-UL	
Video Presenter	UF-130DX	E158873-A14-UL	
Video Presenter	UF-130ST	E158873-A15-UL	
Network Video Recorder	SNR-6400, SNR-3200, SRN-3250, SRN-6450	E158873-A16-UL	
Digital Video Recorder.	SVR-480	E158873-A17-UL	Withdrawn
Video Presenter	SDP-860	E158873-A18-UL	
Digital Video Recorder.	SVR-1670	E158873-A19-UL	
UTP Power Supply Unit	SPU-400	E158873-A20-UL	Withdrawn
Digital Presenter	SDP-760	E158873-A44-UL	
Network Camera	SNP-5300H*, SNP-6201H* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A45-UL	
Network Camera	SND-7011*, SND-5011*, SND-5061*, SND-7061*, SNV-5010*, SNZ-5200* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A46-UL	
Network Camera	SNP-5300*, SNP-6201* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A47-UL	
Digital Color Camera	SCP-3371H*, SCP-2371H*, SCP-2271H*, SCP-2373H*, SCP-2273H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A48-UL	
Digital Color Camera	SCP-3371*, SCP-2371*, SCP-2271*, SCP-2373*, SCP-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A49-UL	
Network Camera	SND-7082*, SND-7082F*, SNV-7082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A50-UL	
Network Camera	SNB-7001*, SNB-5001*, SNB-3002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A51-UL	
Network Camera	SNO-7082R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A52-UL	
Network Camera	SNB-7002* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A53-UL	

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DIGITAL COLOR CAMERA	SCV-2010F*, SCD-1020R*, SCD-2080R*, SCD-2020R*, SCD-2010*, SCD-2010B*, SCD-2010F*, SCB-3020*, SCB-3021*, SCB-2010*, SCO-1020R* (* is blank or N or P: N=NTSC, P=PAL)	E158873-A54-UL	
Network Camera	SNB-6004*, SNB-6003*, SNB-5004*, SNB-5003*, SNB-7004*, SNB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A55-UL	
Network Camera	SND-6084*, SND-6083*, SND-5084*, SND-5083*, SND-7084* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A56-UL	
DIGITAL COLOR CAMERA	SCD-2022*, SCD-2022R*, SCD-2042R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A58-UL	
Digital Color Camera	SCB-2004*, SCB-2005* (* is blank or N or P: N = NTSC, P=PAL);	E158873-A59-UL	
Digital Color Camera	SCD-2082*, SCV-2082R*, SCV-3083*, SCD-3083* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A60-UL	
Network Camera	SND-6084R*, SND-7084R*, SND-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A61-UL	
NETWORK CAMERA	SNO-6084R*. SNO-7084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A62-UL	
Network Camera	SNV-6084R*, SNV-6084*, SNV-5084*, SNV-7084*, SNV-7084R*, SNV-5084R*, SNV-6084T* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A63-UL	
Digital Color Camera	SCO-2081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A64-UL	
DIGITAL COLOR CAMERA	SCB-2004*D, SCB-2005*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A65-UL	
DIGITAL VIDEO RECORDER	SRD-1673D*, SRD-1654D*, SRD-854D*, SRD-852D*, SRD-1673*, SRD-1653*, SRD-873*, SRD-1640*, SRD-840*(* is blank or N or P, N=NTSC / P=PAL)	E158873-A66-UL	
Network Camera	SNP-6200RH*, SCP-2370RH* (* is blank or N or P: N=NTSC,P=PAL)	E158873-A67-UL	
Network Camera	SNV-6012M* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A68-UL	
Network Camera	SNF-7010*, SNF-7010V*, SNF-7010VM* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A69-UL	

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Network Camera	SNO-6011R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A72-UL	
Network Camera	SND-6011R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A73-UL	
Digital Video Recorder	SRD-1680D*, SRD-880D* (* is blank or N or P : N=NTSC, P=PAL)	E158873-A74-UL	
DIGITAL COLOR CAMERA	SCZ-2373*, SCZ-2273* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A75-UL	
NETWORK CAMERA	SCO-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A76-UL	
DIGITAL COLOR CAMERA	SCV-6081R* and SCD-6081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A77-UL	
NETWORK VIDEO RECORDER	SRN-4000	E158873-A78-UL	
DIGITAL COLOR CAMERA	SCD-6021* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A81-UL	
NETWORK CAMERA	SNV-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A83-UL	
NETWORK CAMERA	SNB-6010*, SNB-6010A*, SNB-6011*, SNB-6010B*, SNB-6011B* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A85-UL	
NETWORK CAMERA	SNP-6320H*, SNP-5430H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A86-UL	
NETWORK CAMERA	SNP-6320*, SNP-5430* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A87-UL	
Network Video Recorder	SRN-472S, XRN-810S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A88-UL	
Digital Video Recorder	SRD-1676D*, SRD-1656D*, SRD-876D* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A89-UL	
DIGITAL COLOR CAMERA	SCB-5000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A90-UL	
DIGITAL COLOR CAMERA	SCB-5000*D (* is blank or N or P: N = NTSC, P=PAL)	E158873-A91-UL	
DIGITAL COLOR CAMERA	SCD-5080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A92-UL	
DIGITAL COLOR CAMERA	SCB-5003*, SCB-5005*, HCB-6001* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A94-UL	
DIGITAL COLOR CAMERA	SCV-5082* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A95-UL	
DIGITAL COLOR CAMERA	SCD-5083*, SCD-5083R*, SCD-5082*, SCD-5083B*, SCD-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A96-UL	
DIGITAL COLOR CAMERA	SCV-5083* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A97-UL	

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	SCV-5083R* (* is blank or N or P: N = NTSC, P=PAL) SCV-5081R* (* is blank or N or P: N = NTSC, P=PAL)		
NETWORK CAMERA	SNF-8010VM*, SNF-8010* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A98-UL	
DIGITAL COLOR CAMERA	SCD-5030*, SCD-5020* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A99-UL	
NETWORK CAMERA	SNO-5084R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A100-UL	
DIGITAL COLOR CAMERA	SCO-5083R*, SCO-5081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A101-UL	
NETWORK CAMERA	SNP-6321*, SNP-L6233* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A102-UL	
NETWORK CAMERA	SNP-6321H*, SNP-L6233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A103-UL	
DIGITAL COLOR CAMERA	SCV-5085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A104-UL	
NETWORK CAMERA	SNB-8000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A105-UL	
NETWORK CAMERA	SNV-8080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A106-UL	
NETWORK CAMERA	SNZ-6320	E158873-A107-UL	
NETWORK CAMERA	SNP-6320RH*, SNP-L6233RH* (* is blank or N or P: N=NTSC,P=PAL)	E158873-A108-UL	
NETWORK CAMERA	SNP-5321H*, SNP-L5233H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A109-UL	
NETWORK CAMERA	SNP-5321*, SNP-L5233* (* is blank or N: NTSC or P:PAL)	E158873-A110-UL	
NETWORK CAMERA	SND-L6013R*, SND-L6013*, SND-L6012*, SND-L5013* (* is blank or N or P: N:NTSC/P:PAL)	E158873-A111-UL	
NETWORK CAMERA	SNO-L6083R*, SNO-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A113-UL	
Network Video Recorder	SRN-1673S*(* is blank or N or P: N = NTSC, P=PAL)	E158873-A115-UL	
NETWORK CAMERA	SNO-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A118-UL	
NETWORK CAMERA	SND-L6083R*, SND-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A119-UL	
Network Video Recorder	SRN-873S* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A120-UL	

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NETWORK CAMERA	SNV-L6083R*, SNV-L5083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A121-UL	
NETWORK CAMERA	SNB-9000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A122-UL	
Optical PTZ Accessary	SBP-301HF	E158873-A125-UL	
Optical PTZ Accessary	SBP-300HF	E158873-A126-UL	
NETWORK CAMERA	SNV-8081R* (* is Blank or N or P: N = NTSC, P=PAL)	E158873-A127-UL	
NETWORK CAMERA	SNO-8081R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A128-UL	
NETWORK CAMERA	SNV-6085R* (* is blank or N or P: N = NTSC, P=PAL) SNV-6085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A129-UL	
DIGITAL COLOR CAMERA	SCB-6003* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A130-UL	
DIGITAL COLOR CAMERA	SCO-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A132-UL	
DIGITAL COLOR CAMERA	SCV-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A133-UL	
DIGITAL COLOR CAMERA	SCV-6023R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A135-UL	
DIGITAL COLOR CAMERA	SCD-6023R*, SCD-6013* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A136-UL	
DIGITAL COLOR CAMERA	SCD-6083R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A137-UL	
DIGITAL COLOR CAMERA	SCO-6083R*(* is blank or N or P: N = NTSC, P=PAL)	E158873-A138-UL	
NETWORK CAMERA	SNV-L6014RM*, SNV-L6013R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A139-UL	
DIGITAL COLOR CAMERA	PNO-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A140-UL	
NETWORK CAMERA	PNV-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A141-UL	
NETWORK CAMERA	PND-9080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A142-UL	
Digital Video Recorder	SRD-1685*, SRD-894*, HRD-842* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A143-UL	
Digital Video Recorder	SRD-1694*, HRD-1642* (* is blank or N or P, N=NTSC/ P=PAL)	E158873-A144-UL	
Network Video Recorder (NVR)	XRN-2011*, XRN-2010*, XRN-3010*, XRN-1610* (* is blank or N or P: N=NTSC, P=PAL) XRN-2010P/DM, XRN-3010P/DM, XRN-3010A, XRN-2011A, XRN-2010A, XRN-1610A	E158873-A146-UL	
NETWORK CAMERA	QNO-7030R*, QNO-7020R*, QNO-7010R*, QNO-6030R*,	E158873-A147-UL	

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	QNO-6020R*, QNO-6010R*, QNO-6070R*, QNO-7080R*, QNO-6071R* (* is blank or N or P: N = NTSC, P=PAL)		
NETWORK CAMERA	QND-7030R*, QND-7020R*, QND-7010R*, QND-6030R*, QND-6020R*, QND-6010R*, QND-6070R*, QND-7080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A148-UL	
NETWORK CAMERA	QNV-7030R*, QNV-7020R*, QNV-7010R*, QNV-6030R*, QNV-6020R*, QNV-6010R*, QNV-6070R*, QNV-7080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A149-UL	
Network Video Recorder	XRN-1610S* (* is blank or N or P: N=NTSC, P=PAL) XRN-1610SP/DM, XRN-1610SA	E158873-A150-UL	
NETWORK CAMERA	PNF-9010RV*, PNF-9010R*, PNF-9010RVM* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A151-UL	
NETWORK CAMERA	PNM-9020V* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A152-UL	
Network Video Recorder	PRN-4011* (* is blank or N or P: N=NTSC, P=PAL)	E158873-A153-UL	
DIGITAL COLOR CAMERA	HCP-6320*, HCP-6320A*, HCP- 6230* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A154-UL	
DIGITAL COLOR CAMERA	HCP-6320H*, HCP-6320HA*, HCP-6230H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A155-UL	
NETWORK CAMERA	PNP-9200RH*, XNP-6370RH*, XNP-6330RH* (* is blank or N or P: N=NT, P=PAL)	E158873-A156-UL	
NETWORK CAMERA	XNB-8000*, XNB-6000* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A157-UL	
NETWORK CAMERA	XNO-8080R*, XNO-6080R*, XNO-6120R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A158-UL	
NETWORK CAMERA	XNV-8040R*, XNV-8030R*, XNV-8020R*, XNV-6020*, XNV- 6010*, XNV-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A159-UL	
NETWORK CAMERA	XND-8040R*, XND-8030R*, XND-8020R*, XND-6020*, XND- 6010*, XND-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A160-UL	
NETWORK CAMERA	XNV-8080R*, XNV-6080R*, XNV-6080*, XNV-6120R*, XNV- 6120* (* is blank or N or P: N = NTSC, P=PAL), XNV-8080RS, XNV-6080RS, XNV-6120RS,	E158873-A161-UL	

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	XNV-6120RSA, XNV-6080RSA, XNV-8080RSA		
NETWORK CAMERA	XND-8080RV*, XND-8080R*, XND-6080RV*, XND-6080R*, XND-6080V*, XND-6080* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A162-UL	
AHD Multi Directional Camera	HCM-9020VQ* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A163-UL	
NETWORK CAMERA	XNO-8020R*, XNO-8030R*, XNO-8040R*, XNO-6010R*, XNO-6020R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A164-UL	
NETWORK CAMERA	XNV-6011* (* is blank or N or P: N = NTSC, P=PAL), XNV-6011W	E158873-A165-UL	
DIGITAL COLOR CAMERA	HCD-6080R*, HCD-6070R*, SCD-6085R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A167-UL	
DIGITAL COLOR CAMERA	HCV-6080R*, HCV-6070R*, SCV-6085R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A168-UL	
NETWORK CAMERA	XNP-6120H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A169-UL	
NETWORK CAMERA	XND-8020F*, XND-6011F* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A170-UL	
NETWORK CAMERA	PNM-9080VQ* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A172-UL	
Network Storage	SRB-160S	E158873-A173-UL	
NETWORK CAMERA	TNB-6030* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A174-UL	
NETWORK CAMERA	PNM-9081VQ* (* is blank or N or P: N = NTSC, P = PAL)	E158873-A176-UL	
NETWORK CAMERA	XNO-6085R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A177-UL	
NETWORK CAMERA	XNB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A178-UL	
NETWORK VIDEO RECORDER	SNR-D5401N	E158873-A179-UL	
NETWORK CAMERA	XND-6085*, XND-6085V* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A180-UL	
NETWORK CAMERA	XNV-6085* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A181-UL	
NETWORK CAMERA	XNP-6040H* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A182-UL	
NETWORK VIDEO DECODER	SPD-150* (* is blank or N or P: N = NTSC, P=PAL), SPD-151	E158873-A184-UL	
DIGITAL COLOR CAMERA	HCB-6000*, HCB-7000*, SCB-6005* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A185-UL	

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DIGITAL COLOR CAMERA	HCZ-6320*, HCZ-6321* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A186-UL	
NETWORK CAMERA	XNF-8010RVM*, XNF-8010RV*, XNF-8010R*, XNF-8010RW, XNF-8010RVMNB (* is blank or N or P: N = NTSC, P=PAL)	E158873-A187-UL	
DIGITAL COLOR CAMERA	HCO-6070R*, HCO-6080R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A188-UL	
NETWORK CAMERA	XNB-6001* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A189-UL	
DIGITAL COLOR CAMERA	HCO-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A190-UL	
LENS MODULE	SLA-T2480*, SLA-T2480V*, SLA-T4680*, SLA-T4680V*, SLA-T4680D, SLA-T4680DW, SLA-T4680DS, SLA-T2415, SLA-T2815B, SLA-T2480A, SLA-T2480VA, SLA-T4680A, SLA-T4680VA, SLA-T4680DA, SLA-T4680DSA, SLA-T2880BA (* is blank or N or P: N = NTSC, P=PAL)	E158873-A191-UL	
DIGITAL COLOR CAMERA	HCD-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A192-UL	
DIGITAL COLOR CAMERA	HCV-7070R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A193-UL	
NETWORK VIDEO RECORDER	TRM-1610S	E158873-A194-UL	
LENS MODULE	SLA-T1080F*, SLA-T1080FA (* is blank or N or P: N = NTSC, P=PAL)	E158873-A195-UL	
NETWORK SWITCH	SPN-10080P, SPN-10080PM	E158873-A196-UL	
ANALOG CAMERA	HCV-7010R*, HCV-7020R*, HCV-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A197-UL	
DIGITAL COLOR CAMERA	HCD-7010R*, HCD-7020R*, HCD-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A198-UL	
DIGITAL COLOR CAMERA	HCO-7010R*, HCO-7020R*, HCO-7030R* (* is blank or N or P: N = NTSC, P=PAL)	E158873-A199-UL	
NETWORK CAMERA	XNP-6320, QNP-6230, XNP-6321	E158873-A200-UL	
NETWORK CAMERA	XNP-6320H, XNP-6320HS, QNP-6230H, XNP-6321H	E158873-A201-UL	
NETWORK THERMAL CAMERA	TNO-4050T, TNO-4030T, TNO-4040T, TNO-4040TR, TNO-4030TR, TNO-L4030T, TNO-L4030TR	E158873-A202-UL	
NETWORK THERMAL CAMERA	TNO-4051T, TNO-4041T	E158873-A204-UL	

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NETWORK CAMERA	XNV-6013M	E158873-A205-UL	
NETWORK CAMERA	XNV-6012M, XNV-6012	E158873-A206-UL	
NETWORK CAMERA	XNV-6022R, XNV-6022RM	E158873-A207-UL	
NETWORK CAMERA	LNO-6070R, LNO-6071R	E158873-A208-UL	
NETWORK CAMERA	LNO-6030R, LNO-6020R, LNO-6010R, LNO-6031R, LNO-6021R, LNO-6011R, LNO-6011RW	E158873-A209-UL	
NETWORK CAMERA	LVN-6070R, LVN-6071R	E158873-A210-UL	
NETWORK CAMERA	LND-6070R, LND-6071R	E158873-A213-UL	
NETWORK CAMERA	LVN-6030R, LVN-6020R, LVN-6010R, LVN-6031R, LVN-6021R, LVN-6011R	E158873-A214-UL	
NETWORK CAMERA	LND-6030R, LND-6020R, LND-6010R, LND-6031R, LND-6021R, LND-6011R.	E158873-A215-UL	
NETWORK CAMERA	XNV-L6080R, XNV-L6080	E158873-A216-UL	
NETWORK CAMERA	XND-L6080RV, XND-L6080R, XND-L6080V	E158873-A217-UL	
NETWORK CAMERA	XNO-L6080R	E158873-A218-UL	
NETWORK CAMERA	PNM-7000VD	E158873-A220-UL	
NETWORK VIDEO ENCODER	SPE-410, SPE-410A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A222-UL	
NETWORK VIDEO ENCODER	SPE-1610, SPE-1610A* (* is Blank or N or P, N = NTSC, P = PAL), NVE3016	E158873-A223-UL	
NETWORK POSITIONING CAMERA	TNU-6320, TNU-6321	E158873-A224-UL	
Network Video Recorder	QRN-1610S, QRN-1620S, LRN-1610S	E158873-A225-UL	
NETWORK CAMERA	QNE-7080RV, QNE-6080RV	E158873-A226-UL	
NETWORK CAMERA	PNM-9000VQ	E158873-A227-UL	
Network Camera	XNP-6550RH, XNP-6320RH, XNP-6250RH, QNP-6230RH	E158873-A229-UL	
NETWORK CAMERA	PNM-9320VQP, PNM-9321VQP.	E158873-A230-UL	
NETWORK CAMERA	XNZ-6320	E158873-A231-UL	
NETWORK ENCODER	SPE-110N, SPE-110A* (* is Blank or N or P, N = NTSC, P = PAL)	E158873-A232-UL	
THERMAL POSITIONING CAMERA	TNU-4041T, TNU-4051T	E158873-A233-UL	
NETWORK CAMERA	PNM-9030V	E158873-A234-UL	
NETWORK CAMERA	TNV-7010RC	E158873-A235-UL	
NETWORK CAMERA	XND-8081VZ, XND-8081FZ, XND-6081VZ, XND-6081FZ	E158873-A236-UL	
DIGITAL COLOR CAMERA	HCF-8010V	E158873-A239-UL	
ANALOG CAMERA	HCO-6020R	E158873-A241-UL	

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NETWORK CAMERA	XNV-6081, XNV-6081R, XNV-8081R	E158873-A242-UL	
NETWORK VIDEO RECORDER	TRM-810S, TRM-410S	E158873-A243-UL	
ANALOG CAMERA	HCD-6020R, HCD-6010	E158873-A244-UL	
NETWORK CAMERA	XND-6081V, XND-6081F, XND-6081RV, XND-6081RF, XND-8081RV, XND-8081RF	E158873-A245-UL	
NETWORK CAMERA	XND-L6080	E158873-A246-UL	
NETWORK CAMERA	TNO-6010M	E158873-A247-UL	
ANALOG CAMERA	SCO-6085R	E158873-A248-UL	
NETWORK CAMERA	PNM-9000VD, PNM-7002VD	E158873-A249-UL	
NETWORK CAMERA	QND-6083R, QND-6082R, QND-6073R, QND-6072R, QND-6032R, QND-6022R, QND-6012R, QND-6012R1, QND-6022R1, QND-6032R1, QND-6072R1, QND-6082R1	E158873-A250-UL	
NETWORK CAMERA	QNE-8021R, QNE-8011R	E158873-A251-UL	
NETWORK CAMERA	QND-8021, QND-8011	E158873-A252-UL	
NETWORK CAMERA	QNO-8080R, QNO-8010R, QNO-8020R, QNO-8030R	E158873-A253-UL	
NETWORK CAMERA	QND-6021, QND-6011	E158873-A254-UL	
NETWORK CAMERA	QNO-6083R, QNO-6082R, QNO-6012R, QNO-6022R, QNO-6032R, QNO-6072R, QNO-6073R, QNO-6012R1, QNO-6022R1, QNO-6032R1, QNO-6072R1, QNO-6082R1	E158873-A255-UL	
NETWORK CAMERA	QNV-6083R, QNV-6082R, QNV-6073R, QNV-6072R, QNV-6012R, QNV-6022R, QNV-6032R, QNV-6012RA, QNV-6012R1, QNV-6022R1, QNV-6032R1, QNV-6072R1, QNV-6082R1	E158873-A256-UL	
NETWORK CAMERA	QNV-8080R, QNV-8010R, QNV-8020R, QNV-8030R	E158873-A257-UL	
NETWORK CAMERA	QND-8080R, QND-8010R, QND-8020R, QND-8030R	E158873-A258-UL	
NETWORK CAMERA	QNF-8010	E158873-A259-UL	
NETWORK CAMERA	LVN-6012R, LVN-6022R, LVN-6032R	E158873-A260-UL	
NETWORK CAMERA	LVN-6072R	E158873-A261-UL	
NETWORK CAMERA	LND-6012R, LND-6022R, LND-6032R	E158873-A262-UL	
NETWORK CAMERA	LND-6072R	E158873-A263-UL	
NETWORK CAMERA	QNV-6024RM, QNV-6023R, ANV-L6023R	E158873-A264-UL	
NETWORK CAMERA	LNO-6012R, LNO-6022R, LNO-6032R	E158873-A265-UL	
NETWORK CAMERA	LNO-6072R	E158873-A266-UL	

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Digital Video Recorder	HRX-1621* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A267-UL	
Digital Video Recorder	HRX-821* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A268-UL	
NETWORK THERMAL CAMERA	TNO-3010T, TNO-3020T, TNO-3030T, TNO-L3030T	E158873-A269-UL	
NETWORK CAMERA	PNM-9084QZ, PNM-9084QZ1	E158873-A270-UL	
NETWORK CAMERA	XNP-6371RH	E158873-A275-UL	
NETWORK CAMERA	XNZ-L6320	E158873-A276-UL	
NETWORK CAMERA	PNM-9084RQZ*, PNM-9085RQZ*, PNM-9084RQZ1, PNM-9085RQZ1 (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6001-UL	
NETWORK VIDEO RECORDER	WRN-1610S	E158873-A6002-UL	
NETWORK VIDEO RECORDER	WRN-810S* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6003-UL	
NETWORK CAMERA	PNB-A9001, PNB-A9001LP, PNB-A9001OP	E158873-A6005-UL	
NETWORK CAMERA	TNB-9000	E158873-A6006-UL	
NETWORK CAMERA	PNO-A9081R, PNO-A9081RLP, PNO-A9081ROP	E158873-A6007-UL	
NETWORK CAMERA	PNV-A9081R, PNV-A9081RLP, PNV-A9081ROP	E158873-A6008-UL	
NETWORK CAMERA	PND-A9081RF	E158873-A6009-UL	
NETWORK CAMERA	QNB-8002	E158873-A6010-UL	
NETWORK CAMERA	QNB-6002	E158873-A6011-UL	
NETWORK CAMERA	PND-A9081RV	E158873-A6012-UL	
NETWORK CAMERA	QNF-9010	E158873-A6013-UL	
NETWORK CAMERA	XNV-8081RE, XNV-6081RE, XND-8081REV, XND-6081REV	E158873-A6014-UL	
NETWORK CAMERA	XNB-9002, XNB-8002	E158873-A6022-UL	
NETWORK CAMERA	XNV-9082R, XNV-8082R	E158873-A6023-UL	
NETWORK CAMERA	XNO-9082R, XNO-8082R	E158873-A6024-UL	
NETWORK CAMERA	XND-9082RV, XND-8082RV, XND-9082RF, XND-8082RF	E158873-A6025-UL	

UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Listing
CCN:	NWQG, NWGQ7 (Information Technology Equipment Including Electrical Business Equipment)
Product:	NETWORK CAMERA
Model:	XNO-8020R*, XNO-8030R*, XNO-8040R*, XNO-6010R*, XNO-6020R* (* is blank or N or P: N = NTSC, P=PAL)
Rating:	For model XNO-8020R*, XNO-8030R*, XNO-8040R*, 12 Vdc, 0.8 A / PoE(37-57Vdc), 0.3 A, For model XNO-6010R*, XNO-6020R*, 12 Vdc, 0.7 A / PoE(37-57Vdc), 0.3 A
Applicant Name and Address:	HANWHA TECHWIN CO LTD 6, PANGYO-RO 319BEON-GIL, BUNDANG-GU SEONGNAM-SI KOREA, REPUBLIC OF

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

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Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Prepared by: SoonHong Min

Reviewed by: SungIl Kim

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report.
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report.
 - iii. Part AF details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

NETWORK CAMERA employing LED circuit.

Model Differences

XNO-8040R* is basic model. (* is blank or N or P: N = NTSC, P=PAL)

XNO-8020R*, XNO-8030R*, XNO-6010R*, XNO-6020R* are identical to the model XNO-8040R*, except for model designation, resolution and rated current.

Technical Considerations

- Equipment mobility : stationary
- Connection to the mains : No direct connection
- Operating condition : continuous
- Access location : operator accessible
- Over voltage category (OVC) : OVC II
- Mains supply tolerance (%) or absolute mains supply values : No direct connection
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class III (supplied by SELV)
- Considered current rating of protective device as part of the building installation (A) : N/A
- Pollution degree (PD) : N/A
- IP protection class : IP X0
- Altitude of operation (m) : Up to 2 000
- Altitude of test laboratory (m) : Less than 2 000
- Mass of equipment (kg) : 1.22
- The product was investigated to the following additional standards: IEC 62471:2006(1st edition)
- LEDs provided in the product are considered low power devices: Yes
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 55 °C
- The following are available from the Applicant upon request: Installation (Safety) Instructions /

Manual	
▪ Marking Label is representatives of all models.	
Additional Information	
4787838816 Unit is operated continuously with LED.	
4789012312.5 (Revision)	
1. Revise a model name : add a "Blank" on *.	
2. Change an Applicant Address :	
- Address : From '42 SUNGJU-DONG CHANGWON-SI GYEONGNAM 641-716 KOREA' to '6, PANGYO-RO 319BEON-GIL, BUNDANG-GU, SEONGNAM-SI, GYEONGGI-DO, 13488, REPUBLIC OF KOREA'	
Additional Standards	
The product fulfills the requirements of: N/A	
Markings and instructions	
Clause Title	Marking or Instruction Details
1.7.1 Power rating - Ratings	Ratings (voltage, frequency/dc, current)
1.7.1 Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
1.7.1 Power rating - Model	Model Number
Replaceable batteries (in CD ROM instruction)	"CAUTION: Risk of Explosion if Battery is replaced by an Incorrect Type. Dispose of Used Batteries According to the Instructions."
Installation Manual (in CD ROM instruction) - UL Listed PoE Source	The following statement or similar shall be included in the User Manual: The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802-3af shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1.
Installation Manual (in CD ROM instruction) - Selection of Power Supply	The User Manual should provide simple instructions for the correct selection of a suitable Listed Class 2 Power Units, including a statement such as "This product is intended to be supplied by Power Unit marked "Class 2" or "LPS" and rated 12 Vdc, Min. 0.7 or 0.8 A for each model.
Special Instructions to UL Representative	
N/A	

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A						

Earthing Continuity Test Exemptions - This test is not required for the following models:

All models

Electric Strength Test Exemptions - This test is not required for the following models:

All models

Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:

Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
N/A					

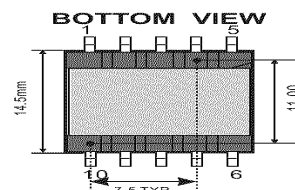
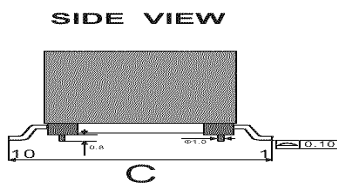
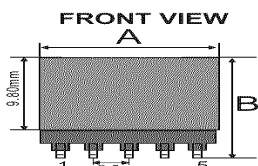
1.5.1	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
Power Supply (Optional) - for model XNO-8040R *, XNO-8030R *, XNO-8020R *	Interchangeable	Interchangeable	Rated output 12 Vdc, min.0.8 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Power Supply (Optional) - for model XNO-6020R *, XNO-6010R *	Interchangeable	Interchangeable	Rated output 12 Vdc, min.0.7 A, marked "LPS" or "Class 2"	QQGQ or EPBU	UL	
Label	Interchangeable	Interchangeable	Min.70 deg. C if max. surface temperature not specified.	PGDQ2 or PGJ12	USR	
Enclosure (Metal)	Interchangeable	Interchangeable	Aluminium, Min.1.5 mm thickness.	-	-	
Enclosure - Front Lens Cover (Plastic)	SABIC INNOVATIVE PLASTICS US L L C	HF1130R(f2)	Min. 1.5 mm thickness, rated Min. V-2, 130 deg. C.	QMFZ2	USR (E121562)	
Internal Plastic Part	SAMYANG CORPORATION	3500G-(z)	Min. 1.5 mm thickness, rated Min. V-0, 125 deg. C.	QMFZ2	USR (E121254)	
PWB	Interchangeable	Interchangeable	Min. V-1, 105 deg. C.	ZPMV2	USR	
Connectors and Receptacles (Secondary circuits)	Interchangeable	Interchangeable	-	ECBT2 or RTRT2	USR	
Connectors and Receptacles (Secondary circuits) (alternate)	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of plastic rated Min. V-2	QMFZ2	USR	
Fuse (F1) - Power board	SEMTEL ELECTRONICS CO LTD	S6125S	125 V, 1.5 A	JDYX2	USR (E338954)	
Fuse (F1) - Back box board	LITTELFUSE INC	449 Series	125 V, 2 A	JDYX2	USR (E10480)	
Transformer(T2)	SHENZHEN	PDT25117SR	130 deg. C	-	-	

	GROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD					
Optocoupler (LS1, LS2)	LITE-ON TECHNOLOGY CORP	LTV-816	Isolation Voltage: 5300. Max. Operation Temperature:110 deg. C	FPQU2	USR (E113898)	
Lithium Battery (BAT1)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium (Coin), Rechargeable, Max Charging voltage: 3.4 Vdc, Max Charging current: 300 mA	BBCV2	USR (MH15628)	
LED	LITE ON	LTE-R38386-S- SS	VF =Max. 2.5 V IF=Max.1 A	-	-	
Internal Wiring (Secondary)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 deg. C	AVLV2	USR	
Cable	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or marked VW-1; Min. 30 V, 80 deg. C	AVLV2	USR	
FPWB	Interchangeable	Interchangeable	Min. V-080 deg. C.	QMFZ2 or QMTS2	USR	

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Overall view
Photographs	3-02	Internal view 1
Photographs	3-03	Internal view 2
Photographs	3-04	Internal view 3
Photographs	3-05	Power board Top view
Photographs	3-06	Power board Bottom view
Photographs	3-07	Main board Top view
Photographs	3-08	Main board Bottom view
Photographs	3-09	Back box Top view
Photographs	3-10	Back box Bottom view
Miscellaneous	7-01	T2 Spec
Miscellaneous	7-02	Label for model XNO-8020R*, XNO-8030R*, XNO-8040R*
Miscellaneous	7-03	Label for model XNO-6010R*, XNO-6020R*
Miscellaneous	7-04	Manual
Miscellaneous	7-05	IEC 62471 report for LED 1

2. Mechanical Dimensions:


Note:

- 1.Wrap 2Ts of 7mm tape around the finished part.
- 2.Place the epoxy to fixed the core.
- 3.Wrap the copper shield for the finished part,then wrap 2T tape.

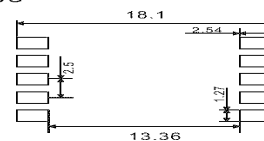
Unit: mm

A MAX	B MAX	C MAX
15.0	14.0	17.8

Marking information

PDT2117SR GROUP-TEK
● YYWW

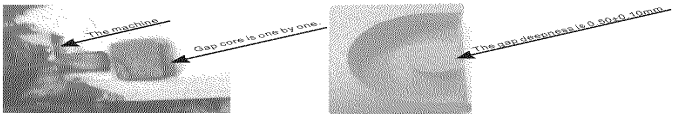
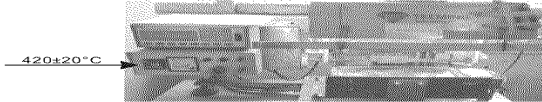
Suggested PCB Paad Layout



3. Electrical Characteristics :

Specifications: at 25 degree C. Operating Temperature -40 to +105°C			
NO.	ITEM	TEST CONDITION	SPECIFICATION
1	Inductance	(3-2) @100KHz, 1.0V	77.0uH ±15%.
2	Inductance	(4-5) @100KHz, 1.0V	23.0uH ±20%.
3	Inductance	(8,9-6,7) @100KHz, 1.0V	31uH ±20%.
4	Leakage Inductance	(3-2) @100KHz, 1.0V with shorted other pins.	3.0uH Max.
5	DCR	(3-2) @ 25°C	0.20Ω Max.
6		(4-5) @ 25°C	0.15Ω Max..
7		(8,9-6,7) @ 25°C	0.15Ω Max.
8	HI-POT	PR TO SEC	1200Vac 5mA 3Sec.
9	TURN RATIO	(3-2):(8,9-6,7)	1:0.64±2%.
10	TURN RATIO	(3-2):(4-5)	1:0.55±2%.

4.Overhauling List.

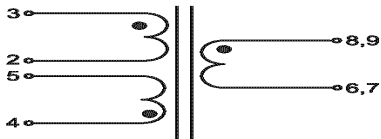
NO.	ITEM	SPECIFICATION
1	Tape turns	2T
2	Margin tape thickness	0.10mm
3	Winding turns	N1:22T N2:14T N3:12T N4:0.9T
4	Shield copper .	0.025mm*7mm
5	Pins order/Pin connection .	1T
6	Marking Information	PDT25117SR GROUP-TEK ● DATE CODE
7	Gap the center leg	
8	Solder Temperature	

4.Winding Information:

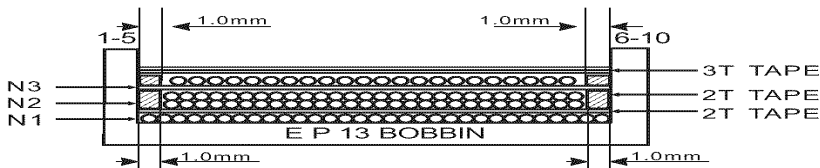
WINDING SEQ.	ST-FN	WIRE/FOIL	TURNS	WRAP INSUL.	MARGIN TAPE	SLEEVE	NOTE
1	3--2	0.30mm 2UEW	22	2T w8.0mm	N/A	N/A	1.
2	8,9--6,7	2*0.30mm 2UEW	14	2T w8.0mm	2T W=1.0mm	N/A	1.
3	4--5	0.30mm 2UEW	12	3T w8.0mm	1T W=1.0mm	N/A	1.

NOTE :
1.Place the bobbin pin 1 left side of operator.

5.Schematic:



6.Winding detail:

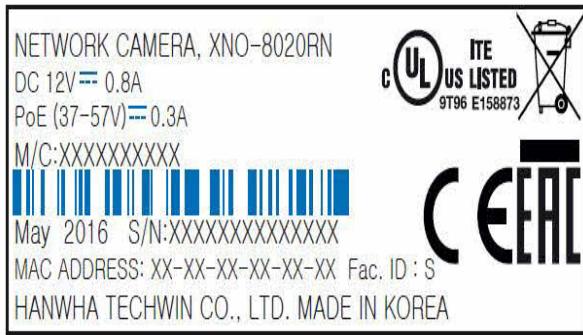


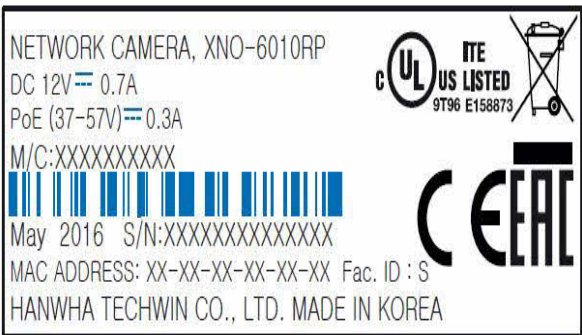
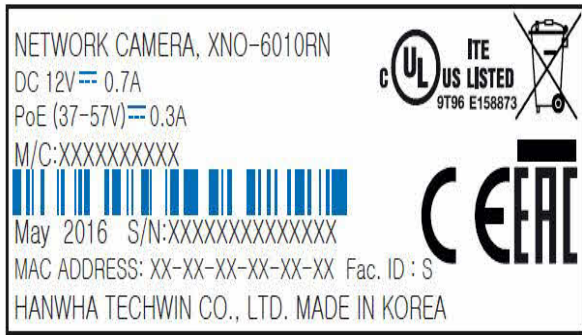
7. Material List:

NO.	ITEM.	MATERIALS	SUPPLIERS/MANUFACTURES	UL FILE NO.
1	BOBBIN	PF2A5-151J(b)	Changshu South EastPlastics Co.,Ltd	E136137
2	CORE	E P13 PG242A	Advance Electronics Products Co.,Ltd	N/A
3	WIRE	POLYURETHANE ENAMELED TYPE NO.: 2UEW $\phi 0.30$ THERMAL RATING: 180°C	Shing Shun Magnet wire(HuiZhou) Co.,Ltd	E255839
4	TAPE	ADHESIVE POLYESTER TAPE TYPE NO.: W-001 THERMAL RATING: 130°C	Shen zhen Weichuangda Packing material Co.,Ltd	E333581
5	SOLDER	SN/CU: 99.3/0.7	Gao Xin stannum industry Co.,Ltd	N/A
6	EPOXY	H-1026	Dongguan city Eatto electronics material Co.,Ltd	N/A
7	INK	VIC-120	Shenshen Huarui samwo group Co.,Ltd	N/A

8. PACKING INFORMATION:

DESCRIPTION	QTY
PIECES PER REEL	150
PIECES PER POCKET	1
PIECES PER BOX	450
REEL PER BOX	3
GROSS WEIGHT PER BOX(KG)	TBD
NET WEIGHT PER BOX(KG)	TBD





overview

IMPORTANT SAFETY INSTRUCTIONS

1. Read these instructions.
2. Keep these instructions.
3. Heed all warnings.
4. Follow all instructions.
5. Do not use this apparatus near water.
6. Clean the contaminated area on the product surface with a soft, dry cloth or a damp cloth.
(Do not use a detergent or cosmetic products that contain alcohol, solvents or surfactants or oil constituents as they may deform or cause damage to the product.)
7. Do not block any ventilation openings. Install in accordance with the manufacturer's instructions.
8. Do not install near any heat sources such as radiators, heat registers, stoves, or other apparatus (including amplifiers) that produce heat.
9. Do not defeat the safety purpose of the polarized or grounding-type plug. A polarized plug has two blades with one wider than the other. A grounding type plug has two blades and a third grounding prong. The wide blade or the third prong are provided for your safety. If the provided plug does not fit into your outlet, consult an electrician for replacement of the obsolete outlet.
10. Protect the power cord from being walked on or pinched particularly at plugs, convenience receptacles, and the point where they exit from the apparatus.
11. Only use attachments/ accessories specified by the manufacturer.
12. Use only with the cart, stand, tripod, bracket, or table specified by the manufacturer, or sold with the apparatus. When a cart is used, use caution when moving the cart/ apparatus combination to avoid injury from tip-over.
13. Unplug this apparatus during lightning storms or when unused for long periods of time.
14. Refer all servicing to qualified service personnel. Servicing is required when the apparatus has been damaged in any way, such as power-supply cord or plug is damaged, liquid has been spilled or objects have fallen into the apparatus, the apparatus has been exposed to rain or moisture, does not operate normally, or has been dropped.
15. This product is intended to be supplied by a Listed Power Supply Unit marked "Class 2" or "LPS" and rated from 12 Vdc, min.0.8 A(XNO-6020R/6030R/6040R) / min.0.7 A(XNO-6010R/6020R).
16. If you use excessive force when installing the product, the camera may be damaged and malfunction. If you forcibly install the product using non-compliant tools, the product may be damaged.
17. Do not install the product in a place where chemical substances or oil mist exists or may be generated. As edible oils such as soybean oil may damage or warp the product, do not install the product in the kitchen or near the kitchen table.
This may cause damage to the product.
18. When installing the product, be careful not to allow the surface of the product to be stained with chemical substance.
Some chemical solvents such as cleaner or adhesives may cause serious damage to the product's surface.
19. If you install/disassemble the product in a manner that has not been recommended, the production functions/ performance may not be guaranteed.
Install the product by referring to "Installation & connection" in the user manual.
20. Installing or using the product in water can cause serious damage to the product.



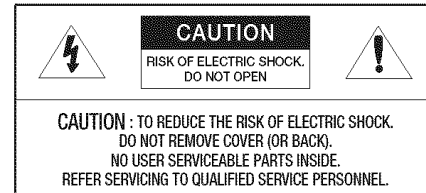
WARNING

TO REDUCE THE RISK OF FIRE OR ELECTRIC SHOCK, DO NOT EXPOSE THIS PRODUCT TO RAIN OR MOISTURE. DO NOT INSERT ANY METALLIC OBJECT THROUGH THE VENTILATION GRILLS OR OTHER OPENINGS ON THE EQUIPMENT.

Apparatus shall not be exposed to dripping or splashing and that no objects filled with liquids, such as vases, shall be placed on the apparatus.

To prevent injury, this apparatus must be securely attached to the Wall/ceiling in accordance with the installation instructions.

CAUTION



EXPLANATION OF GRAPHICAL SYMBOLS



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the user to the presence of "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.



The exclamation point within an equilateral triangle is intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

overview

Class I construction

An apparatus with CLASS I construction shall be connected to a MAINS socket outlet with a protective earthing connection.

Battery

Batteries(battery pack or batteries installed) shall not be exposed to excessive heat such as sunshine, fire or the like.

Disconnection Device

Disconnect the main plug from the apparatus, if it's defected. And please call a repair man in your location.

When used outside of the U.S., it may be used HAR code with fittings of an approved agency is employed.

CAUTION

Risk of explosion if battery is replaced by an incorrect type.

Dispose of used batteries according to the instructions.

These servicing instructions are for use by qualified service personnel only.

To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Please use the input power with just one camera and other devices must not be connected.

The ITE is to be connected only to PoE networks without routing to the outside plant.

Please read the following recommended safety precautions carefully.

- Do not place this apparatus on an uneven surface.
- Do not install on a surface where it is exposed to direct sunlight, near heating equipment or heavy cold area.
- Do not place this apparatus near conductive material.
- Do not attempt to service this apparatus yourself.
- Do not place a glass of water on the product.
- Do not install near any magnetic sources.
- Do not block any ventilation openings.
- Do not place heavy items on the product.
- Please wear protective gloves when installing/removing the camera.
The high temperature of the product surface may cause a burn.

User's Manual is a guidance book for how to use the products.

The meaning of the symbols are shown below.

- Reference : In case of providing information for helping of product's usages
- Notice : If there's any possibility to occur any damages for the goods and human caused by not following the instruction

※ Please read this manual for the safety before using of goods and keep it in the safe place.

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overview

PRODUCT FEATURES

- **Dustproof/Waterproof (IP67, IP66)**
The dustproof and waterproof design makes you feel at ease when installing the product outdoors or exposing it to rain.
- **IR mode**
If the IR indicator turns on, the product switches to the IR mode for preventing an object from being too bright, which helps you identify the object in near distance.
- **Supports 2M pixel resolution videos (XNO-6010R/6020R)**
- **Supports 5M pixel resolution videos (XNO-8020R/8030R/8040R)**
- **Multi-Streaming**
This network camera can display videos in different resolutions and qualities simultaneously using different CODECS.
- **Web Browser-based Monitoring**
Using the Internet web browser to display the image in a local network environment.
- **Alarm**
When an event occurs, video is either sent to the email address registered by the user, sent to the FTP server, saved in a Micro SD card or NAS, or a signal is sent to the alert output terminal.
- **Tampering Detection**
Detects tempering attempts on video monitoring.
- **Defocus detection function**
Detects the defocus phenomenon of the camera lens.
- **Motion Detection**
Detects motion from the camera's video input.
- **Audio Detection**
Detects sound louder than a certain level specified by user.
- **Smart Codec**
Adaptively applies codecs for a portion of the camera's field of view to improve the quality of such area specified by user.
- **Auto Detection of Disconnected Network**
Detects network disconnection before triggering an event.
- **Fog detection**
Detects fog that is heavier than the detection level.
- **Face Detection**
Detects faces in the specified area from the camera's video input.
- **IVA (Intelligent Video Analysis) function**
Detects a motion or situation that meets the configured event rules.
- **Sound source classification**
Detects a sound source specified by the user.
- **ONVIF Compliance**
This product supports ONVIF Profile S&G.
For more information, refer to www.onvif.org.



RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
- RAM : 8G or higher
- Supported OS : Windows 7, 8.1, 10, Mac OS X 10.10, 10.11, 10.12
- **Plug-in free web viewer**
Supported web browsers : Google Chrome, MS Edge, Mozilla Firefox(Windows 64bit only), Apple Safari 9 (Mac OS X only)
- **Plug-in Webviewer**
Supported web browsers : MS Explorer 11, Apple Safari 9 (Mac OS X only)

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

- Recommended capacity : 16GB to 256GB (MLC type)
- The following types of memory cards from the following manufacturers are recommended for this camera.
 - Manufacturer : SanDisk, Transcend
 - Product family : High endurance

NAS RECOMMENDED SPECS

- Recommended capacity : 200GB or higher is recommended.
- Simultaneous access : One unit of NAS can accept a maximum of sixteen camera accesses.
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.

Recommended products	Available sizes
QNAP NAS	A maximum of 16 cameras can access simultaneously.
Synology NAS	A maximum of 16 cameras can access simultaneously.

 If you use NAS equipment for purposes other than video saving, the number of accessible cameras may be reduced.

WHAT'S INCLUDED

Please check if your camera and accessories are all included in the product package.
(As for each sales country, accessories are not the same.)

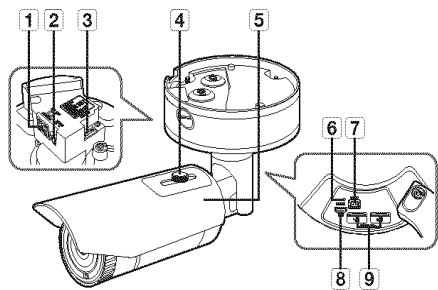
Appearance	Item Name	Quantity	Description
	Camera	1	
	Instruction book, Installer S/W CD	1	
	Quick Guide (Optional)	1	
	Warranty card (Optional)	1	
	Cable for the testing monitor	1	Used to test the camera connection to a portable display device
	Template	1	Product installation guide
	Power Terminal Block	1	Plugged in the power plug
	Power Cable	1	Used to plug into the power port
	L Wrench	1	Used to control the direction of the camera

Appearance	Item Name	Quantity	Description
	Audio/alarm cable	1	Used to connect with the audio and alarm port
	Tapping Screw	4	Used for installation on the wall or ceiling
	Sunshield	1	It protects the camera from the direct sunlight.
	Sunshield Hold	1	It fixes the sunshield with the camera.
	Card-type moisture absorbent	3	Attached when installed.
	BASE WALL MOUNT	1	The adapter that should be adjusted in order to hang the camera on the wall
Options (not included)			
	Pole mount bracket		Cylindrical pole mounting bracket

overview

AT A GLANCE

Appearance & Components



Item	Description	
1 Network Port	Used to connect the PoE or Ethernet cable for network connection.	
2 Power Port	Used to plug the power cable.	
3 Audio and alarm cable port	Port to connect audio and alarm cables.	
	ARM-IN	Used to connect the alarm input sensor or external day/night sensor.
	ARM-OUT	Used to connect the alarm output signal.
	GND	These are common ports to connect alarm input/output signals.
	MIC	Used to connect to a microphone.
4 Sunshield Hold	Used to connect to speakers.	
	It fixes the sunshield with the camera.	
5 Sunshield	It protects the camera from the direct sunlight.	
6 Reset Button	The button restores all camera settings to the factory default. Press and hold for about 5 seconds to reboot the system. ⚠ If you reset the camera, the network settings will be adjusted so that DHCP can be enabled. If there is no DHCP server in the network, you must run the IP Installer program to change the basic network settings such as IP address, Subnet mask, Gateway, etc., before you can connect to the network.	

Item	Description
7 Test Monitor Out	Output port for test monitoring the video output. Use the test monitor cable to connect to a mobile display and check the test video.
8 MICRO USB port	Port to connect the Wi-Fi dongle. You can check the installation video through the applications installed in the smartphone. Refer to "Connect to WiFi dongle" on page 11. * Wi-Fi dongle and OTG gender are sold separately.
9 Micro SD card slot	This is a slot in which you can insert a Micro SD card.

installation & connection

INSTALLATION

-  * This camera is waterproof and in compliance with the IP66/IP67 spec, but the jack connected to the external cable is not. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

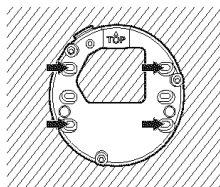
Precautions before installation

Ensure you read out the following instructions before installing the camera:

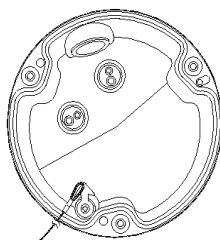
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- Do not use the sunshield hole for any purpose other than for connecting the sunshield.
- If you use excessive force when installing the product, the camera may be damaged and malfunction. If you forcibly install the product using non-compliant tools, the product may be damaged.

Installation

1. Fix the Bottom cover using the 4 tapping screws provided.

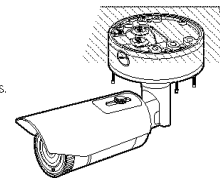


2. Hang the safety cable up on a hook that looks like an arrow in the Bottom cover.
3. Connect the appropriate cables with camera terminals.
4. Tighten the 3 screws on the Top cover using the L wrench provided.



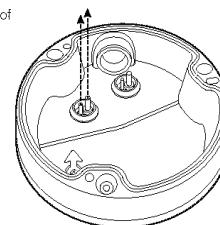
5. Adjust the camera direction using the L wrench provided.

-  * When you adjust the camera position using a bracket, please loosen the bracket screw, adjust the camera, and tighten it. If you attempt to adjust it forcibly while the screw is tight, it may result in a scratch or other problems.



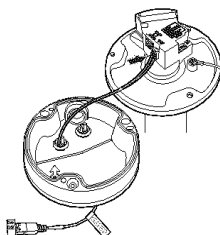
Connecting waterproof power cable and LAN cable

1. Pick off the extruded part of the rubber cover on the bottom side of the bottom cover as shown in the figure below.



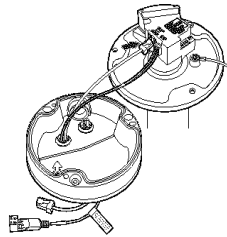
-  * Use an appropriate cable bush for the LAN cable to be connected.
- Basic camera : Use the cable with a diameter of Ø5~6.5.
 - Components provided : Use the cable with a diameter of Ø7~8.5.

2. Insert the power cable into the small hole made by removing the projected part of the rubber plug in step 1 above.
3. Connect the power cable with the power terminal block.



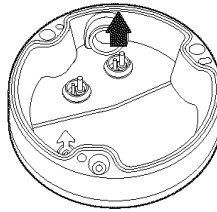
installation & connection

4. Insert the LAN cable into the large hole made by removing the projected part of the rubber plug in step 1 above.
5. Remove the sheath with a cable cutter, and align the cables.
6. Connect the LAN cable with a LAN connector, and insert it into the LAN tool.
7. Connect the finished cable to the Ethernet port.

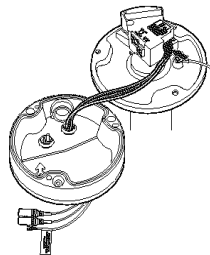


Connecting the alarm and audio cable

1. Remove the rubber cover on the bottom side of the bottom cover as shown in the figure below.



2. Insert the alarm/audio cable through the hole created by removing the rubber cap in No. 1, and connect the cable to the alarm terminal.
3. Align the cable so that it should not be damaged or jammed when installing the camera.
4. Put the rubber cap located on the alarm/audio cable in the hole.



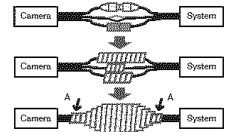
Outdoor installation

When you install it outside of the building, please waterproof it with waterproof butyl rubber tape (can be purchased in stores) so that water does not leak from the gap of the cable connected to the outside.

1. Connect to cables, such as I/O and audio.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.



- ❖ If the cable jacket is not waterproofed properly, then it can directly cause leakage. Make sure to protect the cable with a dense layer of taping.
- ❖ Waterproof butyl tape is made of butyl rubber that can be stretched to twice its normal length.

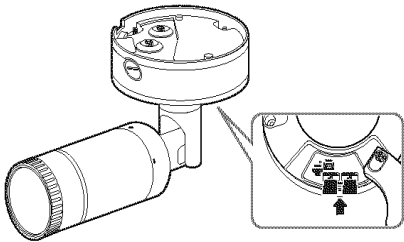


INSERTING/REMOVING A MICRO SD MEMORY CARD

- * Disconnect the power cable from the camera before inserting the Micro SD memory card.
- * Do not insert the Micro SD memory card while it's upside down by force. Otherwise, it may damage the Micro SD memory card.
- * When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.

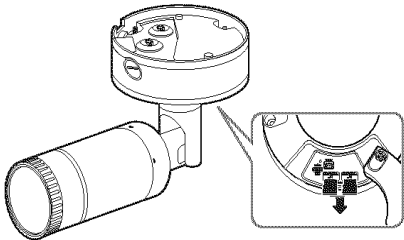
Inserting a Micro SD Memory Card

Insert a Micro SD card in the arrow direction shown in the figure.



Removing a Micro SD Memory Card

Gently press down on the exposed end of the memory card as shown in the diagram to eject the memory card from the slot.



- * Pressing too hard on the Micro SD memory card can cause the card to shoot out uncontrollably from the slot when released.
- * Before removing the Micro SD memory card, in <Storage>, set the device to <Off> and press the (Apply) button and turn the camera off. (Page 42)
- * If you turn off the camera or remove the Micro SD memory card that contains data from the product, the data may be lost or damaged.

MEMORY CARD INFORMATION (NOT INCLUDED)

What is a memory card?

The memory card is an external data storage device that has been developed to offer an entirely new way to record and share video, audio, and text data using digital devices.

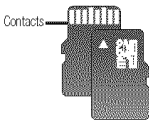
Selecting a memory card that's suitable for you

Your camera supports Micro SD/SDHC/SDXC memory cards. You may, however, experience compatibility issues depending on the model and make of the memory card. The following types of memory cards from the following manufacturers are recommended for this camera.

- Manufacturer : SanDisk, Transcend
- Product family : High endurance

It is recommended to use a 16GB to 256GB (MLC type) memory card for this camera. Playback performance can be affected depending on the speed of memory card.

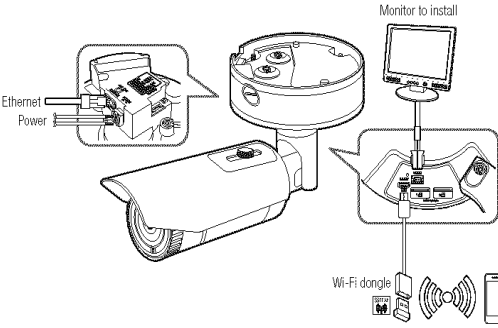
Memory Card Components



Micro SD/SDHC/SDXC

installation & connection

CONNECTING WITH OTHER DEVICE



Monitor to install

Ethernet Power

Wi-Fi dongle

* The CVBS out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

* The Micro USB out terminal of the product is provided for easier installation, and is not recommended for monitoring purposes.

Ethernet Connection

Connect the Ethernet cable to the local network or to the Internet.

Connecting Wi-Fi

Camera Setup

1. Connect OTG gender (5-pin) and WiFi dongle to the micro USB terminal.

Smartphone Setup

1. Install the Wisenet Installation application.
2. Select the camera SSID after turning on the WiFi.
3. Run the Wisenet Installation application.
4. When you log in to the camera, the video will be connected. (initial password: 4321)
- * The video will be played without being logged in during the initial connection.
5. The camera angle can be adjusted through the smartphone video.

Recommended dongle manufacturer

Manufacturer	Model
NETIS	WF2123 n300
EDIMAX	EW-7811Un
IP Time	N100mini
TP-LINK	TL-WN823N V1
ASUS	USB-N13
NETGEAR	WNA3100M

Power Supply

Use the screwdriver to connect each line (+, -) of the power cable to the corresponding power port of the camera.

- * If both PoE and DC 12V are applied simultaneously, the product will be supplied with power from DC 12V.
- You can also use a router featuring PoE to supply power to the camera.
 - Use PoE that is compliant with the IEEE 802.3af protocols.
 - It is advisable to use only one power source from PoE and DC 12V.
- * Be careful not to reverse the polarity when you connect the power cable.
- * If you want to connect an external device, you must turn off the external device before proceeding.
- * Connect the set and the adapter power line first, and then connect the power cable to the outlet on the wall.

Power Cable Specification for Each Model

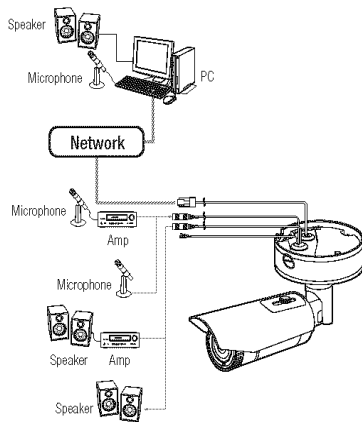
In case of DC 12V Input:

Wire Type (AWG)	#20	#18
Cable Length (Max.)	17m	27m

Network Cable Specification

Item	Contents	Remark
Connector	RJ45	
Ethernet	10/100Base-T	10/100 Mbps
Cable	UTP Category 5e	
Max Distance	100M	
PoE Support	IEEE 802.3af	

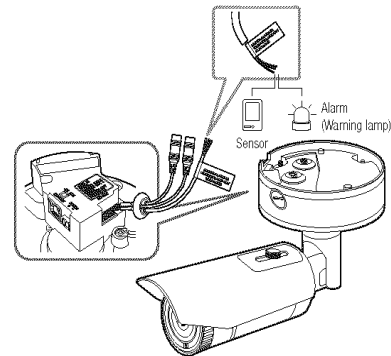
Connecting to Audio Input/Output



1. Connect the AUDIO IN port of the camera with the microphone or LINE OUT port of the amplifier that the microphone is connected to.
 2. Connect the AUDIO OUT port of the camera with the speaker or LINE IN port of the amplifier that the speaker is connected to.
 3. Check the specifications for audio input.
- **Audio Codec**
 - Audio In : G.711 PCM (Bit Rate: 64Kbps / Sampling Frequency: 8kHz), G.726 ADPCM (Bit Rate: 16Kbps, 24Kbps, 32Kbps, 40Kbps / Sampling Frequency: 8kHz), AAC (Bit Rate: 48Kbps / Sampling Frequency: 16kHz)
 - Audio Out : G.711 PCM (Bit Rate: 64Kbps / Sampling Frequency: 8kHz)
 - **Full duplex Audio**
 - **Audio in** : Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 2K Ohm
 - **Audio out** : Line-out (3.5mm mono jack), Maximum output: 1Vrms
 - **Line out impedance** : 600Ω

Connecting to the I/O port box

Connect the Alarm I/O cable to the corresponding port of the port box.



- **ALARM-IN** : Used to connect the alarm input sensor or external day/night sensor.
- **ALARM-OUT** : Used to connect the alarm output signal.
- **GND** : Common port for alarm in/output signal.

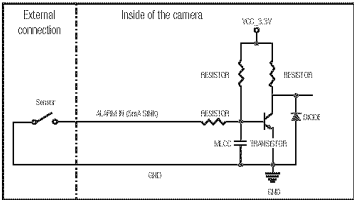
ⓘ If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction.
Refer to the "Alarm Out Wiring Diagram" when connecting devices that exceed the voltage and current specifications. (page 14)

To connect the external sensor

Connect one strand of each signal line (2-strand) of the sensors to the [ALARM IN] port, and connect the other strand to the [GND] port.

installation & connection

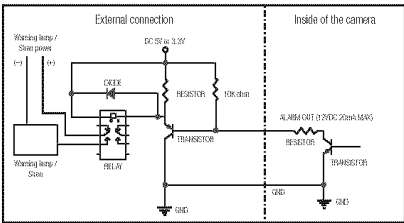
Alarm In Wiring Diagram



To connect the alarm out

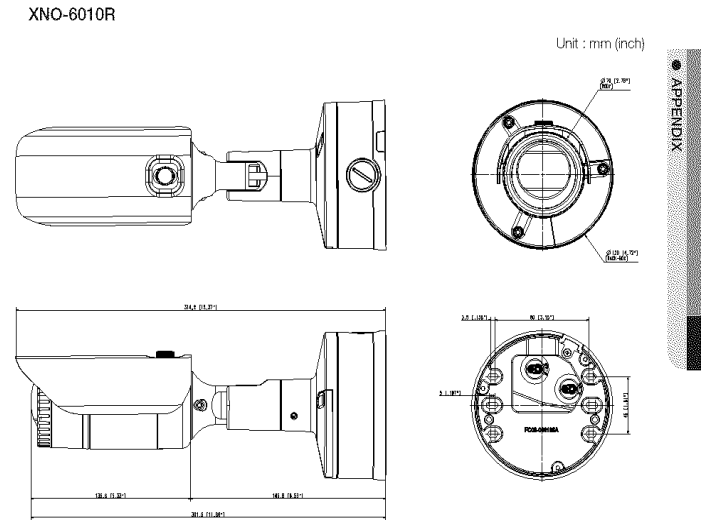
If devices (e.g., flashing light and siren) that exceed the voltage and current specifications are connected by using the open collector method, it may cause malfunction.
Refer to the alarm out connection diagram below when connecting devices that exceed the voltage and current specifications.

Alarm Out Wiring Diagram



Items		Description	
		XNO-6010R/6020R	XNO-8020R/8030R/8040R
Network	Application Programming Interface	ONVIF Profile S/G SUNAPI(HTTP API) Open Platform	
	Webpage Language	English, Korean, French, German, Spanish, Italian, Chinese, Russian, Japanese, Swedish, Portuguese, Czech, Polish, Turkish, Dutch, Hungarian, Greek	
	Web Viewer	Supported OS : Windows 7 / 8.1 / 10, MAC OS X 10.10, 10.11, 10.12 Plug-in free web viewer Supported web browsers : Google Chrome 54, MS Edge 38, Mozilla Firefox 49(Window 64bit only) , Apple Safari 9 (Mac OS X only) Plug-in web viewer Supported web browsers : MS Explorer 11, Apple Safari 9 (Mac OS X only)	
	Central Management Software	SmartViewer, SSM	
Environmental	Operating Temperature / Humidity	-30°C ~ +55°C (-22°F ~ +131°F) / Less than 90% RH * Start up should be done at above -20°C	
	Storage Temperature / Humidity	-50°C ~ +60°C (-58°F ~ +140°F) / Less than 90% RH	
	Ingress Protection	IP67, IP66, NEMA 4X	
	Vandal Resistance	IK10	
Electrical	Input Voltage / Current	12VDC ± 10%, PoE (IEEE802.3af)	
	Power Consumption	XNO-6010R : Max. 8.8W(12VDC), Max. 9.7W(PoE) XNO-6020R : Max. 7.8W(12VDC), Max. 8.8W(PoE)	Max. 9.3W(12VDC), Max. 9.7W(PoE)
Mechanical	Color / Material	Dark gray / Aluminum	
	Dimension (ØxH)	XNO-6010R : Ø70 x H301.5mm (Ø2.76" x H11.87") XNO-6020R/8020R/8030R/8040R : Ø70 x H296mm (Ø2.76" x H11.65")	
	Weight	1.22Kg (2.69lb)	

PRODUCT OVERVIEW





Test Report issued under the responsibility of:



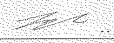
TEST REPORT IEC 62471 Photobiological safety of lamps and lamp systems	
Report Reference No.	16-022102-01
Date of issue	2016-05-09
Total number of pages	20 pages
CB Testing Laboratory	KTL (Korea Testing Laboratory)
Address	87, Digital-ro 26-gil, Guro-gu, Seoul, 08389, Rep. of Korea
Applicant's name	Hanwha Techwin Co., Ltd.
Address	1204, Changwondae-ro, Sungsan-gu, Changwon-si, Gyeongsangnam-do, Korea
Test specification:	
Standard	IEC 62471:2006 (First Edition) + European Group Difference and National Differences
Test procedure	N/A
Non-standard test method	N/A
Test Report Form No.	IEC62471A
TRF Originator	VDE Testing and Certification Institute
Master TRF	Dated 2009-05
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This report is not valid as a CB Test Report unless signed by an approved CB Testing Laboratory and appended to a CB Test Certificate issued by an NCB in accordance with IECEE 02.	
Test item description	ANALOG CAMERA
Trade Mark	
Manufacturer	Same as applicant
Model/Type reference	PNO-9080R*
Ratings	AC24V, 50-60Hz, DC12 V, 0.71A, PoE48 Exempt Group

TRF No. IEC62471A



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Testing procedure and testing location:	
☒ CB Testing Laboratory:	KTL (Korea Testing Laboratory)
Testing location/ address	87, Digital-ro 26-gil, Guro-gu, Seoul, 08389, Rep. of Korea
☐ Associated CB Laboratory:	
Testing location/ address	
Tested by (name + signature)	JinWook Kwon 
Approved by (+ signature)	Jae-Hoon Jung 
☐ Testing procedure: TMP	
Tested by (name + signature)	
Approved by (+ signature)	
Testing location/ address	
☐ Testing procedure: WMT	
Tested by (name + signature)	
Witnessed by (+ signature)	
Approved by (+ signature)	
Testing location/ address	
☐ Testing procedure: SMT	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	
☐ Testing procedure: RMT	
Tested by (name + signature)	
Approved by (+ signature)	
Supervised by (+ signature)	
Testing location/ address	

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Summary of testing:	
Tests performed (name of test and test clause): - All clauses - by supplying DC12V to the model PNO-9080RN	Testing location: KTL (Korea Testing Laboratory) 87, Digital-ro 26-gil, Guro-gu, Seoul, 08389, Rep. of Korea
Summary of compliance with National Differences: The sample(s) tested complies with the requirements of EN 62471:2008. See Attachment at the end of this report for compliance with European Group Difference and National Differences.	
Copy of marking plate:	
Item covered Model PNO-9080R*(* mean N: NT & P: PAL) cover PNO-9080RN and PNO-9080RP	

TRF No. IEC62471A



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Test item particulars									
Tested lamp	☒ continuous wave lamps ☐ pulsed lamps								
Tested lamp system	-								
Lamp classification group	☒ exempt ☐ risk 1 ☐ risk 2 ☐ risk 3								
Lamp cap	-								
Bulb	LED								
Rated of the lamp	-								
Furthermore marking on the lamp	-								
Seasoning of lamps according IEC standard	-								
Used measurement instrument	See page 15								
Temperature by measurement	24.1 °C								
Information for safety use	Not required								
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)								
Testing:									
Date of receipt of test item	2016-04-19								
Date (s) of performance of tests	2016-04-19~ 05-09								
General remarks:									
The test results presented in this report relate only to the object tested. This report shall not be reproduced, except in full, without the written approval of the Issuing testing laboratory. "(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. List of test equipment must be kept on file and available for review.									
General product information:									
- LED Package									
<table border="1"> <thead> <tr> <th>Manufacturer</th> <th>Model</th> <th>Rating</th> <th>Color Rank</th> </tr> </thead> <tbody> <tr> <td>LITEON</td> <td>LTE-R38386-S-SS</td> <td>V_F=Max. 2.5V I_F= 1A</td> <td>-</td> </tr> </tbody> </table>	Manufacturer	Model	Rating	Color Rank	LITEON	LTE-R38386-S-SS	V _F =Max. 2.5V I _F = 1A	-	
Manufacturer	Model	Rating	Color Rank						
LITEON	LTE-R38386-S-SS	V _F =Max. 2.5V I _F = 1A	-						

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
4	EXPOSURE LIMITS		
4.1	General		P
	The exposure limits in this standard is not less than 0.01 ms and not more than any 8-hour period and should be used as guides in the control of exposure		P
	Detailed spectral data of a light source are generally required only if the luminance of the source exceeds 10 ⁴ cd.m ⁻²	see clause 4.3	P
4.3	Hazard exposure limits		P
4.3.1	Actinic UV hazard exposure limit for the skin and eye		P
	The exposure limit for effective radiant exposure is 30 J.m ⁻² within any 8-hour period		P
	To protect against injury of the eye or skin from ultraviolet radiation exposure produced by a broadband source, the effective integrated spectral irradiance, E _{eff} , of the light source shall not exceed the levels defined by:		P
	$E_{eff} \cdot t = \sum_{\lambda=200}^{400} E_{\lambda}(\lambda, t) \cdot S_{UV}(\lambda) \cdot \Delta\lambda \cdot \Delta t \leq 30 \quad \text{J.m}^{-2}$		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye or skin shall be computed by:		P
	$t_{max} = \frac{30}{E_{eff}} \quad \text{s}$		P
4.3.2	Near-UV hazard exposure limit for eye		P
	For the spectral region 315 nm to 400 nm (UV-A) the total radiant exposure to the eye shall not exceed 10000 J.m ⁻² for exposure times less than 1000 s. For exposure times greater than 1000 s (approximately 16 minutes) the UV-A irradiance for the unprotected eye, E _{UVA} , shall not exceed 10 W.m ⁻² .		P
	The permissible time for exposure to ultraviolet radiation incident upon the unprotected eye for time less than 1000 s, shall be computed by:		P
	$t_{max} \leq \frac{10\,000}{E_{UVA}} \quad \text{s}$		P
4.3.3	Retinal blue light hazard exposure limit		P
	To protect against retinal photochemical injury from chronic blue-light exposure, the integrated spectral radiance of the light source weighted against the blue-light hazard function, B(λ), i.e., the blue-light weighted radiance, L _B , shall not exceed the levels defined by:		P

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$L_B \cdot t = \sum_{300}^{700} \sum_i L_{\lambda}(\lambda, i) \cdot B(\lambda) \cdot \Delta\lambda \leq 10^6 \quad \text{J} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t \leq 10^4 \text{ s}$ $t_{max} = \frac{10^6}{L_B}$	P
	$L_B = \sum_{300}^{700} L_{\lambda} \cdot B(\lambda) \cdot \Delta\lambda \leq 100 \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	for $t > 10^4 \text{ s}$	P
4.3.4	Retinal blue light hazard exposure limit – small source		P
	Thus the spectral irradiance at the eye E_{λ} , weighted against the blue-light hazard function $B(\lambda)$ shall not exceed the levels defined by:	see table 4.2	P
	$E_B \cdot t = \sum_{300}^{700} \sum_i E_{\lambda}(\lambda, i) \cdot B(\lambda) \cdot \Delta\lambda \leq 100 \quad \text{J} \cdot \text{m}^{-2}$		P
	$E_B = \sum_{300}^{700} E_{\lambda} \cdot B(\lambda) \cdot \Delta\lambda \leq 1 \quad \text{W} \cdot \text{m}^{-2}$		P
4.3.5	Retinal thermal hazard exposure limit		P
	To protect against retinal thermal injury, the integrated spectral radiance of the light source, L_{λ} , weighted by the burn hazard weighting function $R(\lambda)$, (from Figure 4.2 and Table 4.2), i.e., the burn hazard weighted radiance, shall not exceed the levels defined by:	see table 4.2	P
	$L_R = \sum_{380}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{50\,000}{\alpha \cdot t^{0.25}} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$	($10 \mu\text{s} \leq t \leq 10 \text{ s}$)	P
4.3.6	Retinal thermal hazard exposure limit – weak visual stimulus		N/A
	For an infrared heat lamp or any near-infrared source where a weak visual stimulus is inadequate to activate the aversion response, the near infrared (780 nm to 1400 nm) radiance, L_{IR} , as viewed by the eye for exposure times greater than 10 s shall be limited to:		N/A
	$L_{IR} = \sum_{780}^{1400} L_{\lambda} \cdot R(\lambda) \cdot \Delta\lambda \leq \frac{6\,000}{\alpha} \quad \text{W} \cdot \text{m}^{-2} \cdot \text{sr}^{-1}$		N/A
4.3.7	Infrared radiation hazard exposure limits for the eye		P
	To avoid thermal injury of the cornea and possible delayed effects upon the lens of the eye (cataractogenesis), ocular exposure to infrared radiation, E_{IR} , over the wavelength range 780 nm to 3000 nm, for times less than 1000 s, shall not exceed:		P
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 18\,000 \cdot t^{-0.75} \quad \text{W} \cdot \text{m}^{-2}$		P
	For times greater than 1000 s the limit becomes:		P

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	$E_{IR} = \sum_{780}^{3000} E_{\lambda} \cdot \Delta\lambda \leq 100 \quad \text{W} \cdot \text{m}^{-2}$		P
4.3.8	Thermal hazard exposure limit for the skin		N/A
	Visible and infrared radiant exposure (380 nm to 3000 nm) of the skin shall be limited to:		N/A
	$E_{H,t} = \sum_{380}^{3000} \sum_t E_{\lambda}(\lambda,t) \cdot \Delta\lambda \cdot \Delta t \leq 20\,000 \cdot t^{0.25} \quad \text{J} \cdot \text{m}^{-2}$		N/A
5	MEASUREMENT OF LAMPS AND LAMP SYSTEMS		P
5.1	Measurement conditions		P
	Measurement conditions shall be reported as part of the evaluation against the exposure limits and the assignment of risk classification.		P
5.1.1	Lamp ageing (seasoning)		P
	Seasoning of lamps shall be done as stated in the appropriate IEC lamp standard.		P
5.1.2	Test environment		P
	For specific test conditions, see the appropriate IEC lamp standard or in absence of such standards, the appropriate national standards or manufacturer's recommendations.	manufacturer's recommendations.	P
5.1.3	Extraneous radiation	No extraneous radiation	P
	Careful checks should be made to ensure that extraneous sources of radiation and reflections do not add significantly to the measurement results.		P
5.1.4	Lamp operation		P
	Operation of the test lamp shall be provided in accordance with:		P
	– the appropriate IEC lamp standard, or		N/A
	– the manufacturer's recommendation		P
5.1.5	Lamp system operation		P
	The power source for operation of the test lamp shall be provided in accordance with:		N/A
	– the appropriate IEC standard, or		N/A
	– the manufacturer's recommendation		P
5.2	Measurement procedure		P
5.2.1	Irradiance measurements		P
	Minimum aperture diameter 7mm.		P
	Maximum aperture diameter 50 mm.		P

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	The measurement shall be made in that position of the beam giving the maximum reading.		P
	The measurement instrument is adequate calibrated.		P
5.2.2	Radiance measurements		P
5.2.2.1	Standard method		P
	The measurements made with an optical system.		P
	The instrument shall be calibrated to read in absolute radiant power per unit receiving area and per unit solid angle to acceptance averaged over the field of view of the instrument.		P
5.2.2.2	Alternative method		N/A
	Alternatively to an imaging radiance set-up, an irradiance measurement set-up with a circular field stop placed at the source can be used to perform radiance measurements.		N/A
5.2.3	Measurement of source size	13.1 mrad	P
	The determination of α , the angle subtended by a source, requires the determination of the 50% emission points of the source.		P
5.2.4	Pulse width measurement for pulsed sources	Continuous sources	N/A
	The determination of Δt , the nominal pulse duration of a source, requires the determination of the time during which the emission is > 50% of its peak value.		N/A
5.3	Analysis methods		P
5.3.1	Weighting curve interpolations		P
	To standardize interpolated values, use linear interpolation on the log of given values to obtain intermediate points at the wavelength intervals desired.	see table 4.1	P
5.3.2	Calculations		P
	The calculation of source hazard values shall be performed by weighting the spectral scan by the appropriate function and calculating the total weighted energy.		P
5.3.3	Measurement uncertainty		N/A
	The quality of all measurement results must be quantified by an analysis of the uncertainty.		N/A
6	LAMP CLASSIFICATION		
	For the purposes of this standard it was decided that the values shall be reported as follows.	see table 6.1	P

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	– for lamps intended for general lighting service, the hazard values shall be reported as either irradiance or radiance values at a distance which produces an illuminance of 500 lux, but not at a distance less than 200 mm		N/A
	– for all other light sources, including pulsed lamp sources, the hazard values shall be reported at a distance of 200 mm		P
6.1	Continuous wave lamps		P
6.1.1	Except Group		P
	In the except group are lamps, which does not pose any photobiological hazard. The requirement is met by any lamp that does not pose:	See table 6.1	P
	– an actinic ultraviolet hazard (E_a) within 8-hours exposure (30000 s), nor		P
	– a near-UV hazard (E_{UVA}) within 1000 s, (about 16 min), nor		P
	– a retinal blue-light hazard (L_B) within 10000 s (about 2,8 h), nor		P
	– a retinal thermal hazard (L_R) within 10 s, nor		P
	– an infrared radiation hazard for the eye (E_{IR}) within 1000 s		P
6.1.2	Risk Group 1 (Low-Risk)		N/A
	In this group are lamps, which exceeds the limits for the except group but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_a) within 10000 s, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 300 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 100 s, nor		N/A
	– a retinal thermal hazard (L_R) within 10 s, nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 100 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 100 s are in Risk Group 1.		N/A
6.1.3	Risk Group 2 (Moderate-Risk)		N/A
	This requirement is met by any lamp that exceeds the limits for Risk Group 1, but that does not pose:		N/A
	– an actinic ultraviolet hazard (E_a) within 1000 s exposure, nor		N/A
	– a near ultraviolet hazard (E_{UVA}) within 100 s, nor		N/A
	– a retinal blue-light hazard (L_B) within 0,25 s		N/A

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict
	(aversion response), nor		
	– a retinal thermal hazard (L_{RT}) within 0,25 s (aversion response), nor		N/A
	– an infrared radiation hazard for the eye (E_{IR}) within 10 s		N/A
	Lamps that emit infrared radiation without a strong visual stimulus and do not pose a near-infrared retinal hazard (L_{IR}), within 10 s are in Risk Group 2.		N/A
6.1.4	Risk Group 3 (High-Risk)		N/A
	Lamps which exceed the limits for Risk Group 2 are in Group 3.		N/A
6.2	Pulsed lamps		N/A
	Pulse lamp criteria shall apply to a single pulse and to any group of pulses within 0,25 s.		N/A
	A pulsed lamp shall be evaluated at the highest nominal energy loading as specified by the manufacturer.		N/A
	The risk group determination of the lamp being tested shall be made as follows:		N/A
	– a lamp that exceeds the exposure limit shall be classified as belonging to Risk Group 3 (High-Risk)		N/A
	– for single pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be classified as belonging to the Exempt Group		N/A
	– for repetitively pulsed lamps, a lamp whose weighted radiant exposure or weighted radiance dose is below the EL, shall be evaluated using the continuous wave risk criteria discussed in clause 6.1, using time averaged values of the pulsed emission		N/A

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IEC 62471			
Clause	Requirement + Test	Result -- Remark	Verdict
Table 4.1	Spectral weighting function for assessing ultraviolet hazards for skin and eye		N/A
Wavelength ¹ λ , nm	UV hazard function $S_w(\lambda)$	Wavelength λ , nm	UV hazard function $S_w(\lambda)$
200	0,030	313*	0,006
205	0,051	315	0,003
210	0,075	316	0,0024
215	0,095	317	0,0020
220	0,120	318	0,0016
225	0,150	319	0,0012
230	0,190	320	0,0010
235	0,240	322	0,00067
240	0,300	323	0,00054
245	0,360	325	0,00050
250	0,430	328	0,00044
254*	0,500	330	0,00041
255	0,520	333*	0,00037
260	0,650	335	0,00034
265	0,810	340	0,00028
270	1,000	345	0,00024
275	0,960	350	0,00020
280*	0,880	355	0,00016
285	0,770	360	0,00013
290	0,640	365*	0,00011
295	0,540	370	0,000093
297*	0,460	375	0,000077
300	0,300	380	0,000064
303*	0,120	385	0,000053
305	0,060	390	0,000044
308	0,026	395	0,000036
310	0,015	400	0,000030

¹ Wavelengths chosen are representative; other values should be obtained by logarithmic interpolation at intermediate wavelengths.
 * Emission lines of a mercury discharge spectrum.

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Clause	Requirement + Test	Result – Remark	Verdict
Table 4.2	Spectral weighting functions for assessing retinal hazards from broadband optical sources		P
Wavelength nm	Blue-light hazard function B (λ)	Burn hazard function R (λ)	
300	0.01		
305	0.01		
310	0.01		
315	0.01		
320	0.01		
325	0.01		
330	0.01		
335	0.01		
340	0.01		
345	0.01		
350	0.01		
355	0.01		
360	0.01		
365	0.01		
370	0.01		
375	0.01		
380	0.01		
385	0.013	0.1	
390	0.025	0.13	
395	0.05	0.25	
400	0.10	0.5	
405	0.20	1.0	
410	0.40	2.0	
415	0.80	4.0	
420	0.90	8.0	
425	0.95	9.0	
430	0.98	9.5	
435	1.00	9.8	
440	1.00	10.0	
445	0.97	10.0	
450	0.94	9.7	
455	0.90	9.4	
460	0.80	9.0	
465	0.70	8.0	
470	0.62	7.0	
475	0.55	6.2	
480	0.45	5.5	
485	0.40	4.5	
490	0.22	4.0	
495	0.16	2.2	
500-600	10 ^[(450-λ)/50]	1.6	
600-700	0.001	1.0	
700-1050		10 ^[(700-λ)/500]	
1050-1150		0.2	
1150-1200		0.2 10 ^{0.02[(1150-λ)]}	
1200-1400		0.02	

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IEC 62471			
Clause	Requirement + Test	Result – Remark	Verdict

Table 5.4 Summary of the ELs for the surface of the skin or cornea (irradiance based values)					N/A
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Limiting aperture rad (deg)	EL in terms of constant irradiance $W \cdot m^{-2}$
Actinic UV skin & eye	$E_S = \sum E_A \cdot S(\lambda) \cdot \Delta\lambda$	200 – 400	< 30000	1,4 (80)	30/t
Eye UV-A	$E_{UVA} = \sum E_A \cdot \Delta\lambda$	315 – 400	≤ 1000 > 1000	1,4 (80)	10000/t 10
Blue-light small source	$E_B = \sum E_A \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	≤ 100 > 100	$< 0,011$	100/t 1,0
Eye IR	$E_{IR} = \sum E_A \cdot \Delta\lambda$	780 – 3000	≤ 1000 > 1000	1,4 (80)	18000/t ^{0,75} 100
Skin thermal	$E_H = \sum E_A \cdot \Delta\lambda$	380 – 3000	< 10	2π sr	20000/t ^{0,75}

Table 5.5 Summary of the ELs for the retina (radiance based values)					P
Hazard Name	Relevant equation	Wavelength range nm	Exposure duration sec	Field of view radians	EL in terms of constant radiance $W \cdot m^{-2} \cdot sr^{-1}$
Blue light	$L_B = \sum L_A \cdot B(\lambda) \cdot \Delta\lambda$	300 – 700	0,25 – 10 10-100 100-10000 ≥ 10000	0,011•√(t/10) 0,011 0,0011•√t 0,11	10 ⁶ /t 10 ⁶ /t 10 ⁶ /t 100
Retinal thermal	$L_R = \sum L_A \cdot R(\lambda) \cdot \Delta\lambda$	380 – 1400	$< 0,25$ 0,25 – 10	0,0017 0,011•√(t/10)	50000/(α•t ^{0,25}) 50000/(α•t ^{0,25})
Retinal thermal (weak visual stimulus)	$L_{IR} = \sum L_A \cdot R(\lambda) \cdot \Delta\lambda$	780 – 1400	> 10	0,011	6000/α

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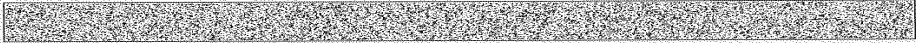


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IEC 62471									
Clause	Requirement + Test			Result – Remark					Verdict
Table 6.1 Emission limits for risk groups of continuous wave lamps									P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W•m ⁻²	0,001	9.71E-07	0,003	n/a	0,03	n/a
Near UV		E _{UVA}	W•m ⁻²	10	1.12E-04	33	n/a	100	n/a
Blue light	B(λ)	L _B	W•m ⁻² •sr ⁻¹	100	0.0023	10000	n/a	4000000	n/a
Blue light, small source	B(λ)	E _B	W•m ⁻²	1,0*	0E+00	1,0	n/a	400	n/a
Retinal thermal	R(λ)	L _R	W•m ⁻² •sr ⁻¹	28000/α = 2129308.2 5	2.15E+04	28000/α = 1944478.0 4	n/a	71000/α = 4930640.7 5	n/a
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W•m ⁻² •sr ⁻¹	6000/α = 456280.34	n/a	6000/α = 416673.87	n/a	6000/α = 416673.87	n/a
IR radiation, eye		E _{IR}	W•m ⁻²	100	17.4148	570	n/a	3200	n/a
* Small source defined as one with α < 0,011 radian. Averaging field of view at 10000 s is 0,1 radian. ** Involves evaluation of non-GLS source									

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Furthermore remarks:
- Measuring Instrument

Name	Maker	Model No.
Spectrometer	Bentham	IDR300
Telescope	Bentham	TEL309
Cosine response diffuser	Bentham	D7
Quartz fiber bundle	Bentham	FOP-UV-1
Source profiler	Bentham	PSL-Source Profiler
Illuminance meter	Gigahertz-optik	X1

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IEC62471A - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

ATTACHMENT TO TEST REPORT IEC 62471 EUROPEAN GROUP DIFFERENCES AND NATIONAL DIFFERENCES Photobiological safety of lamps and lamps systems			
Differences according to		EN62471:2008	
Attachment Form No.		EU_GD_IEC62471A	
Attachment Originator		IMQ S.p.A.	
Master Attachment		2009-07	
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CENELEC COMMON MODIFICATIONS (EN)			
4	EXPOSURE LIMITS		
	Contents of the whole Clause 4 of IEC 62471:2006 moved into a new informative Annex ZB		—
	Clause 4 replaced by the following:		
	Limits of the Artificial Optical Radiation Directive (2006/25/EC) have been applied instead of those fixed in IEC 62471:2006	See appended Table 6.1	P
4.1	General		
	First paragraph deleted	Noted	—

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표위 마크는 주위 전자파를 대조 프로그램에서 원본대조서 사용되는 2D코드입니다.



IEC62471A - ATTACHMENT									
Clause	Requirement + Test			Result - Remark				Verdict	
Table 6.1 Emission limits for risk groups of continuous wave lamps (based on EU Directive 2006/25/EC)									P
Risk	Action spectrum	Symbol	Units	Emission Measurement					
				Exempt		Low risk		Mod risk	
				Limit	Result	Limit	Result	Limit	Result
Actinic UV	S _{UV} (λ)	E _s	W·m ⁻²	0,001	9.71E-07	-	-	-	-
Near UV		E _{UVA}	W·m ⁻²	0,33	1.12E-04	-	-	-	-
Blue light	B(λ)	L _B	W·m ⁻² ·sr ⁻¹	100	0.0023	10000	-	4000000	-
Blue light, small source	B(λ)	E _B	W·m ⁻²	0,01*	0E+00	1.0	-	400	-
Retinal thermal	R(λ)	L _R	W·m ⁻² ·sr ⁻¹	28000/α = 2129308.25	2.15E+04	28000/α	-	71000/α	-
Retinal thermal, weak visual stimulus**	R(λ)	L _{IR}	W·m ⁻² ·sr ⁻¹	545000 0,0017≤ α ≤ 0,011	-				
				6000/α 0,011≤ α ≤ 0,1	-				
IR radiation, eye		E _{IR}	W·m ⁻²	100	17.4148	570	-	3200	-

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IEC62471A - ATTACHMENT			
Clause	Requirement + Test	Result - Remark	Verdict

*

Small source defined as one with $\alpha < 0,011$ radian. Averaging field of view at 10000 s is 0,1 radian.

**

Involves evaluation of non-GLS source

NOTE

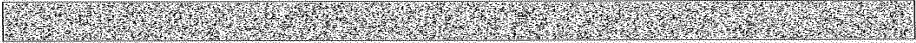
The action functions: see Table 4.1 and Table 4.2

The applicable aperture diameters: see 4.2.1

The limitations for the angular subtenses: see 4.2.2

The related measurement condition 5.2.3 and the range of acceptance angles: see Table 5.5.

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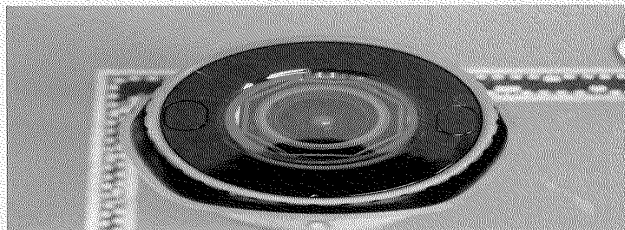
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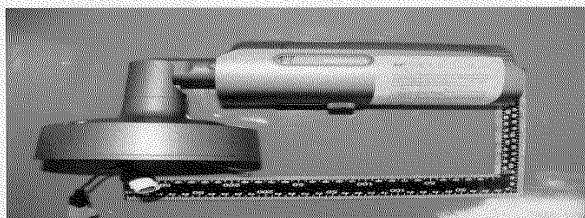
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<Fig. 1>

Photographs



<Fig. 2>



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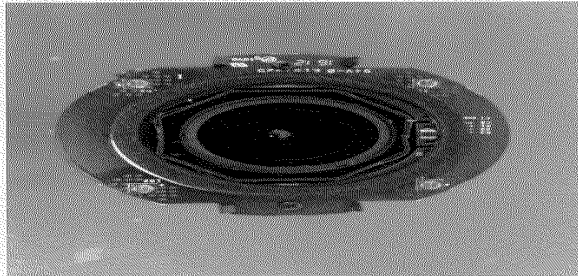


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Korea Testing Laboratory

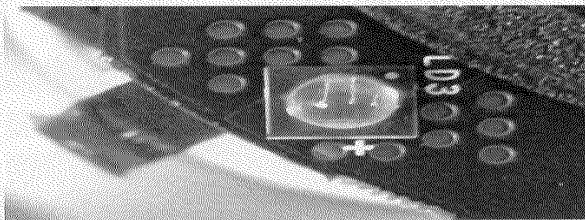
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<Fig. 3>



<Fig. 4>



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