



File E158873

Vol X13

Authorization Page 1

Issued: 2020-07-22

Revised: 2023-05-02

FOLLOW-UP SERVICE PROCEDURE
(TYPE R)

AUDIO/VIDEO, INFORMATION AND COMMUNICATION TECHNOLOGY EQUIPMENT
(AZOT, AZOT7)

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

2467434 (Party Site)
KCE Co Ltd
KCE B/D 34, Annam-ro 369beon-gil Bupyeong-gu
Incheon 21312 KR
Factory ID: C
UL Contracting Party for above site is: UL GmbH

(100578-786) 241273 (Party Site)
OIC KOREA CO LTD
5F, 12 Annam-ro 369beon-gil Bupyeong-gu
Incheon 21312 KR
Factory ID: O
UL Contracting Party for above site is: UL GmbH

2637173 (Party Site)
KOSTEM CO.,Ltd.
4-74, 228, Haan-ro
Gwangmyeong-si Gyeonggi-do KR
Factory ID: KOS
UL Contracting Party for above site is: UL GmbH



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
NETWORK VIDEO RECORDER	XRN-6410B4, XRN-3210B4	E158873-A6027-UL	
NETWORK VIDEO RECORDER	PRN-6410B4, PRN-3210B4, XRP-4210B4, PRN-6400B4, PRN-3200B4	E158873-A6028-UL	
NETWORK VIDEO RECORDER	XRN-6410DB4	E158873-A6029-UL	
NETWORK VIDEO RECORDER	PRN-6410DB4, XRP-4310DB4, PRN-6400DB4	E158873-A6030-UL	
NETWORK CAMERA	PNM-9002VQ	E158873-A6031-UL	
NETWORK CAMERA	XNF-9010RV, XNF-9010RVM, XNF-9010RS	E158873-A6032-UL	
NETWORK CAMERA	PNM-9000QB	E158873-A6033-UL	
NETWORK CAMERA	XNP-9300RW, XNP-8300RW, XNP-6400RW	E158873-A6034-UL	
NETWORK CAMERA	TNV-8010C, TNV-8011C	E158873-A6035-UL	
OUTDOOR NETWORK CAMERA	PNM-8082VT	E158873-A6036-UL	
THERMAL CAMERA	TNM-3620TDY	E158873-A6037-UL	
DIGITAL VIDEO RECORDER	HRX-1621* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6038-UL	
NETWORK CAMERA	PNM-9022V	E158873-A6039-UL	
NETWORK CAMERA	PNM-9322VQP	E158873-A6040-UL	
DIGITAL VIDEO RECORDER	HRX-821* (* is Blank or N or P : P=PAL, N=NTSC)	E158873-A6041-UL	
NETWORK I/O BOX	SPM-4210	E158873-A6042-UL	
NETWORK VIDEO RECORDER	XRN-2011*, XRN-2010*, XRN-3010*, XRN-1610*, XRN-2010P/DM, XRN-3010P/DM, XRN-3010A, XRN-2011A, XRN-2010A, XRN-1610A (* is blank or N or P: N=NTSC, P=PAL)	E158873-A6043-UL	
PUBLIC VIEW MONITOR	SMT-2730PV	E158873-A6044-UL	
PUBLIC VIEW MONITOR	SMT-3230PV	E158873-A6045-UL	
CAMERA HOUSING	SHB-9000H	E158873-A6046-UL	
PUBLIC VIEW MONITOR	SMT-1030PV	E158873-A6047-UL	
NETWORK CAMERA	XNP-9250R, XNP-8250R, XNP-6400R	E158873-A6049-UL	
NETWORK CAMERA	XNP-9250, XNP-8250, XNP-6400	E158873-A6050-UL	
NETWORK CAMERA	ONO-9081R	E158873-A6051-UL	
NETWORK CAMERA	ONV-9081R	E158873-A6052-UL	
NETWORK VIDEO RECORDER	XRN-1620B2	E158873-A6053-UL	

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NETWORK VIDEO RECORDER	XRN-1620SB1	E158873-A6054-UL	
NETWORK VIDEO RECORDER	XRN-820S	E158873-A6055-UL	
NETWORK CAMERA	SCO-6020	E158873-A6056-UL	
NETWORK CAMERA	TNF-9010	E158873-A6057-UL	
NETWORK VIDEO RECORDER	PRN-3210B2, PRN-1610B2, XRN-6410RB2, XRN-3210RB2, XRN-6410B2, XRN-3210B2, PRN-3200B2, PRN-3205B2, PRN-1600B2, PRN-1605B2	E158873-A6058-UL	
NETWORK CAMERA	PNB-A6001	E158873-A6059-UL	
NETWORK CAMERA	PND-A6081RV, PND-A6081RF	E158873-A6060-UL	
NETWORK CAMERA	PNO-A6081R	E158873-A6061-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 (* is blank or N or P: N = NTSC, P=PAL)	E158873-A6062-UL	
NETWORK CAMERA	PNV-A6081R	E158873-A6063-UL	
NETWORK CAMERA	XNB-6001*, XNB-H6240A, XNB-H6242A	E158873-A6064-UL	
NETWORK THERMAL CAMERA	TNO-3030T, TNO-3020T, TNO-3010T, TNO-3040T, TNO-3050T	E158873-A6067-UL	
NETWORK CAMERA	QNP-6320, QNP-6250, QNP-6251	E158873-A6068-UL	
NETWORK CAMERA	QNP-6320H, QNP-6250H, QNP-6251H	E158873-A6069-UL	
NETWORK CAMERA	XNV-C9083R, XNV-C8083R, XNV-C7083R, XNV-C6083R, XNV-C6083	E158873-A6070-UL	
NETWORK CAMERA	TID-600R	E158873-A6071-UL	
DIGITAL VIDEO RECORDER	HRX-1632, HRX-835	E158873-A6072-UL	
LED MONITOR	SMT-4343	E158873-A6073-UL	
NETWORK CAMERA	TNO-7180R, TNO-7180RLP	E158873-A6075-UL	
NETWORK CAMERA	XND-C9083RV, XND-C8083RV, XND-C7083RV, XND-C6083RV	E158873-A6076-UL	
NETWORK CAMERA	PNM-9031RV	E158873-A6077-UL	
NETWORK CAMERA	QNO-7082R	E158873-A6078-UL	
NETWORK CAMERA	QND-7082R	E158873-A6080-UL	
NETWORK CAMERA	QNV-7082R	E158873-A6081-UL	
NETWORK CAMERA	XNO-C9083R, XNO-C8083R, XNO-C7083R, XNO-C6083R	E158873-A6082-UL	
NETWORK CAMERA	XNV-9083R, XNV-8083R, XNV-8093R, XNV-6083R	E158873-A6083-UL	
NETWORK CAMERA	XND-9083RV, XND-8083RV, XND-8093RV, XND-6083RV	E158873-A6084-UL	
NETWORK CAMERA	QNO-7032R, QNO-7022R, QNO-7012R	E158873-A6088-UL	

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NETWORK CAMERA	XNB-9003, XNB-8003, XNB-6003	E158873-A6089-UL	
NETWORK CAMERA	XNO-9083R, XNO-8083R, XNO-6083R	E158873-A6091-UL	
NETWORK CAMERA	QNV-7012R, QNV-7022R, QNV-7032R	E158873-A6092-UL	
NETWORK CAMERA	QND-7012R, QND-7022R, QND-7032R	E158873-A6093-UL	
NETWORK CAMERA	QNP-6320R, QNP-6250R	E158873-A6094-UL	
NETWORK CAMERA	XNV-6123R	E158873-A6100-UL	
NETWORK CAMERA	XNO-6123R	E158873-A6101-UL	
NETWORK CAMERA	LNO-6072R	E158873-A6102-UL	
NETWORK CAMERA	LVN-6012R, LVN-6022R, LVN-6032R, ANV-L6012R	E158873-A6103-UL	
NETWORK CAMERA	LVN-6072R	E158873-A6104-UL	
NETWORK CAMERA	LND-6012R, LND-6022R, LND-6032R	E158873-A6105-UL	
NETWORK CAMERA	LND-6072R	E158873-A6106-UL	
NETWORK CAMERA	LNO-6012R, LNO-6022R, LNO-6032R, ANO-L6012R, ANO-L6022R	E158873-A6107-UL	
NETWORK CAMERA	ANO-L7022R, ANO-L7012R	E158873-A6108-UL	
NETWORK CAMERA	TNV-7010RC, TNV-7011RC	E158873-A6109-UL	
NETWORK CAMERA	ANV-L7012R	E158873-A6110-UL	
NETWORK CAMERA	XNZ-6320A	E158873-A6111-UL	
NETWORK CAMERA	QNP-6320HS	E158873-A6112-UL	
NETWORK CAMERA	PNM-A9083RVD, PNM-A7083RVD, PNM-C12083RVD, PNM-C7083RVD	E158873-A6113-UL	
NETWORK VIDEO RECORDER	ARN-1610S	E158873-A6114-UL	
NETWORK CAMERA	XNZ-L6320A	E158873-A6115-UL	
NETWORK VIDEO RECORDER	QRN-1630S, XRN-815S	E158873-A6116-UL	
NETWORK CAMERA	ANO-L7082R, ANO-L6082R	E158873-A6117-UL	
THERMAL NETWORK CAMERA	TNM-C4940TD, TNM-C4950TD, TNM-C4960TD	E158873-A6118-UL	
NETWORK CAMERA	ANE-L7012R, ANE-L6012R	E158873-A6119-UL	
NETWORK CAMERA	PNM-12082RVD, PNM-7082RVD	E158873-A6120-UL	
NETWORK CAMERA	ANV-L7082R, ANV-L6082R	E158873-A6121-UL	
DIGITAL VIDEO RECORDER	HRX-1635	E158873-A6122-UL	
DIGITAL VIDEO RECORDER	HRX-835A	E158873-A6123-UL	
NETWORK CAMERA	XNF-9013RV	E158873-A6124-UL	
NETWORK VIDEO ENCODER	SPE-1630	E158873-A6125-UL	
NETWORK VIDEO RECORDER	QRN-430S, ARN-410S	E158873-A6126-UL	
NETWORK VIDEO RECORDER	XRN-420S	E158873-A6127-UL	

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NETWORK VIDEO RECORDER	QRN-830S	E158873-A6128-UL	
NETWORK VIDEO RECORDER	ARN-810S	E158873-A6129-UL	
NETWORK CAMERA	XNV-9083RZ, XNV-8083RZ, XNV-6083RZ	E158873-A6130-UL	
DIGITAL VIDEO RECORDER	HRX-434	E158873-A6131-UL	
NETWORK CAMERA	XNV-8083Z, XNV-6083Z	E158873-A6132-UL	
NETWORK VIDEO ENCODER	SPE-420	E158873-A6133-UL	
NETWORK CAMERA	XNB-6002, XNB-H6244A	E158873-A6134-UL	
DIGITAL VIDEO RECORDER	HRX-435	E158873-A6135-UL	
DIGITAL VIDEO RECORDER	HRX-1634	E158873-A6136-UL	
VIDEO DECODER	SPD-152	E158873-A6137-UL	
NETWORK CAMERA	PNM-C9022RV	E158873-A6138-UL	
PENDANT SPEAKER	SPA-P100W, SPA-P100B	E158873-A6139-UL	
SECURITY LED MONITOR	SMT-2212	E158873-A6140-UL	
DIGITAL VIDEO RECORDER	ARD-1610	E158873-A6142-UL	
DIGITAL VIDEO RECORDER	ARD-810, ARD-410	E158873-A6144-UL	
NETWORK CAMERA	PNV-A6081R-E2T, PNV-A6081R-E1T	E158873-A6150-UL	
USB JOYSTICK CONTROLLER	SPC-2001	E158873-A6151-UL	
NETWORK CAMERA	MGC-D8080LI, MGC-D8080	E158873-A6153-UL	
NETWORK CAMERA	QNO-C9083R, QNO-C8083R	E158873-A6154-UL	
NETWORK CAMERA	QNV-C9083R, QNV-C8083R	E158873-A6155-UL	
NETWORK CAMERA	XNP-C9303RW, XNP-C8303RW, XNP-C6403RW	E158873-A6158-UL	
NETWORK CAMERA	XNP-C9253R, XNP-C8253R, XNP-C6403R	E158873-A6159-UL	
NETWORK CAMERA	XNP-C9253, XNP-C8253, XNP-C6403	E158873-A6160-UL	
NETWORK CAMERA	TNV-C7013RC	E158873-A6161-UL	
NETWORK CAMERA	MGC-F9010LI	E158873-A6162-UL	
NETWORK CAMERA	PNM-C32083RVQ, PNM-C16083RVQ	E158873-A6163-UL	
NETWORK CAMERA	QNV-C9011R, QNV-C8011R, QNV-C8012	E158873-A6164-UL	
ANALOG CAMERA	ACE-8020R, ACE-6020R	E158873-A6165-UL	
ANALOG CAMERA	ACV-8081R, ACV-8080R	E158873-A6166-UL	
ANALOG CAMERA	ACO-8020R, ACO-6020R	E158873-A6167-UL	
NETWORK CAMERA	ANE-L7012L	E158873-A6168-UL	
NETWORK CAMERA	PNM-C34404RQPZ	E158873-A6178-UL	

UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements) CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 (Audio/video, information and communication technology equipment Part 1: Safety requirements)
Certification Type:	Listing
CCN:	AZOT, AZOT7 (Audio/video, Information and Communication Technology Equipment)
Complementary CCN:	N/A
Product:	NETWORK CAMERA
Model:	PNM-C32083RVQ, PNM-C16083RVQ
Rating:	PoE (55 Vdc), 0.6 A
Applicant Name and Address:	HANWHA VISION CO LTD 6, PANGYO-RO 319BEON-GIL, BUNDANG-GU SEONGNAM-SI GYEONGGI-DO 13488 KOREA

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.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

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

Prepared By: Lawrence Lee / Project Handler Reviewed By: SungIl Kim / Reviewer

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 is designed for outdoor or indoor use, ceiling use with mounting brackets.

It is a commercial equipment supplied from UL listed PoE (Power over Ethernet) and installed by service personnel.

Model Differences

PNM-C32083RVQ is basic model.

PNM-C16083RVQ is identical to basic model except model designation, sensor, and resolution.

Test Item Particulars

Product group	end product
Classification of use by	Instructed person
Supply Connection	not mains connected: ES1
Supply tolerance	None
Supply connection – type	PoE (Power over Ethernet)
Considered current rating of protective device	N/A
Equipment mobility	wall/ceiling-mounted
Over voltage category (OVC)	OVC I
Class of equipment	Class III
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	55 Outdoor: minimum -40
IP protection class	IP 66
Power systems	not AC mains
Altitude during operation (m)	2000 m or less
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	2.57

Technical Considerations

- ☐ The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 55 °C

- ☐ The product is intended for use on the following power systems : No direct connection
- ☐ Considered current rating of protective device as part of the building installation (A) : N/A
- ☐ Mains supply tolerance (%) or absolute mains supply : No direct connection
- ☐ The Risk Group of a lamp or lamp system (including LEDs) is : RG 1
- ☐ The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual
- ☐ The outdoor equipment/enclosure was evaluated for use in an ambient range of : -40 °C to 55 °C

Additional Information

4790789566

- Maximum Normal Load: Continuous operation (Operate the camera through networked equipment with IR LED on and USB load 0.3 A) + Optional features (Heater on / off)

Additional Standards

The product fulfills the requirements of: IEC 62471:2006

Markings and Instructions

Clause Title	Marking or Instruction Details
Optical radiation from lamps - Hazard-related risk group marking of equipment: Retinal thermal hazard, weak visual stimulus 780-1400 nm	"WARNING - IR emitted from this product." for Risk Group 1. "MISE EN GARDE - IR émis par ce produit." for Risk Group 1. Text on equipment is black on a yellow background. Reproduction in user manual is not required to be in color.
Optical radiation from lamps - Explanation of marking information and guidance on control measures: Retinal thermal hazard, weak visual stimulus 780-1400 nm	"Do not stare at operating lamp." for Risk Group 1. "Ne pas regarder fixement la lampe." for Risk Group 1.
Equipment identification marking – Manufacturer identification	Listee's or Recognized Company's name, Trade Name, File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, dc, current)
Outdoor enclosure type	"Rainproof", IP66
Hard Copy	A. IMPORTANT or ATTENTION or similar wording B. Please check 'Manuals' from our website, before connecting to the supply. C. Company website URL (https://www.~~)

Website Manual - 1	This product is intended to be supplied by a UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from PoE (55 Vdc), 0.6 A.
Website Manual - 2	The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3.at shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL 60950-1 or PS2 as defined in UL 62368-1.
Special Instructions to UL Representative N/A	

BD1.0	TABLE: Production-Line Testing Requirements					
BD1.1	Electric Strength Test Special Constructions – Refer to Generic Inspection Instructions, Part AC for further information.					
Model	Component	Removable parts	Test probe location	Test V rms	Test V dc	Test Time, s
N/A	N/A	N/A	N/A	N/A	N/A	N/A
BD1.2	Earthing Continuity Test Exemptions – This test is not required for the following models:					
	All model					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	All model					
BD1.4	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.					
	All model					

BE1.0	Sample and Test Specifics for Follow-Up Tests at UL				
Model	Component	Material	Test	Sample (s)	Test Specifics
N/A	N/A	N/A	N/A	N/A	N/A

4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Enclosure for Camera cover dome (Plastic)	MITSUBISHI ENGINEERING- PLASTICS CORP	S-2000V+(f1)	Min. 2.5 mm thickness, rated Min. V-2, 115 deg. C	QMFZ2	UL (E41179)	
Enclosure for top (Black, Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 2.0 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
Enclosure for Side (Black, Plastic)	SABIC JAPAN L L C	EXL9330(X)(f1)	Min. 1.5 mm thickness, rated Min. V-0 ,125 deg. C	QMFZ2	UL (E207780)	
Enclosure for IR Cover (Plastic)	Covestro Deutschland AG [PC Resins]	2407+(z)(f1)	Min. 1.5 mm thickness, rated Min. V-2, 115 deg. C	QMFZ2	UL (E41613)	
Enclosure for Side (Metal)	Interchangeable	Interchangeable	Aluminum, Min. 2.5 mm thickness.	-	-	
Bracket (Metal)	Interchangeable	Interchangeable	Aluminum, Min. 2.5 mm thickness, See enclosure for more detail.	-	-	
Internal Plastic	SAMYANG CORPORATION	3025G10	Min. 1.0 mm thickness, rated Min. V-0, 115 deg. C	QMFZ2	UL (E121254)	
Internal Plastic - Alternate	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 1.0 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
Internal Metal	Interchangeable	Interchangeable	Aluminum, Min. 1.0 mm thickness.	-	-	
Opto-coupler (LS1)	LITE-ON TECHNOLOGY CORP	LTV-816-G	Isolation Voltage: 5000. Max. Operation Temperature:110 deg. C	FPQU2	UL (E113898)	

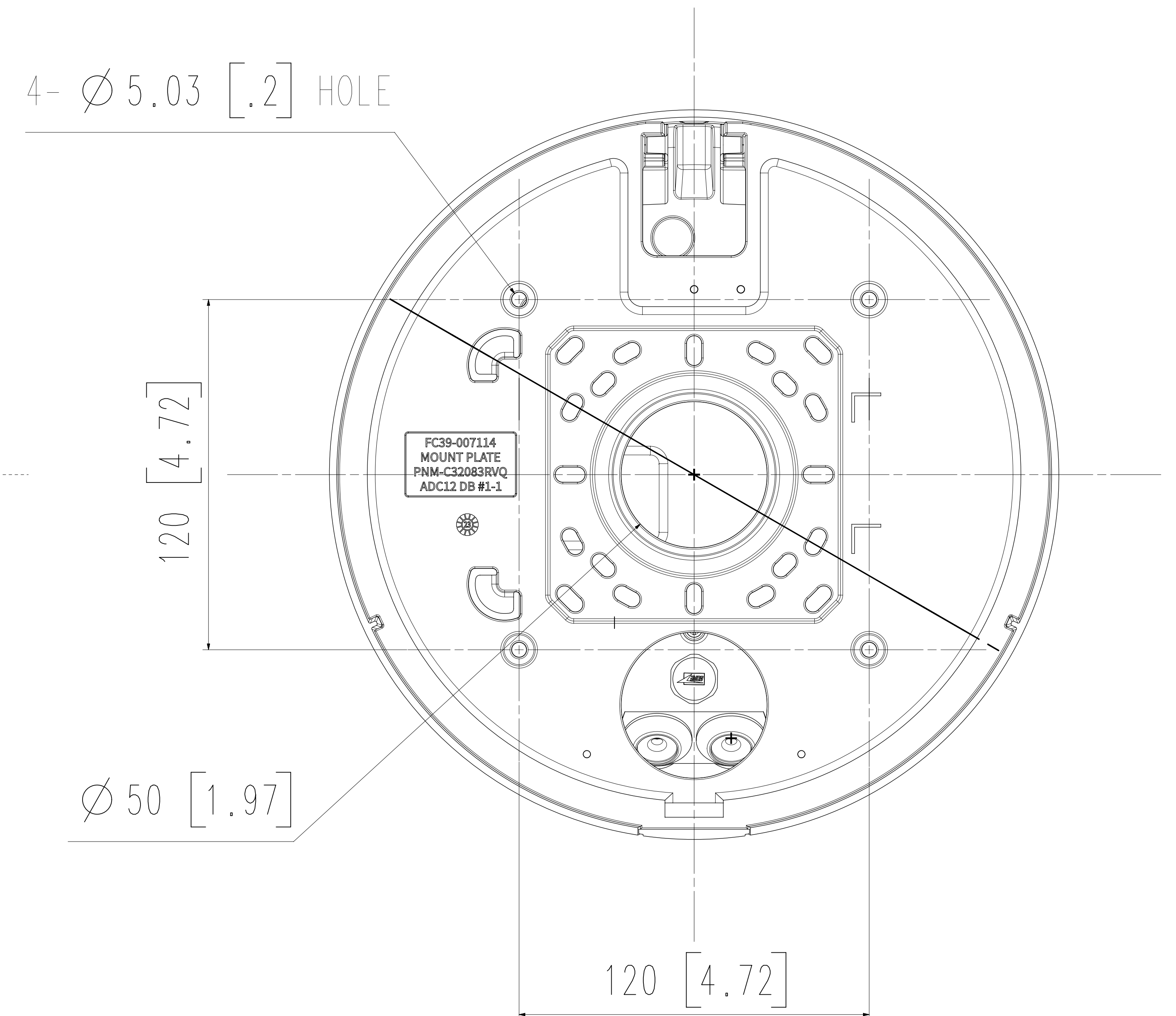
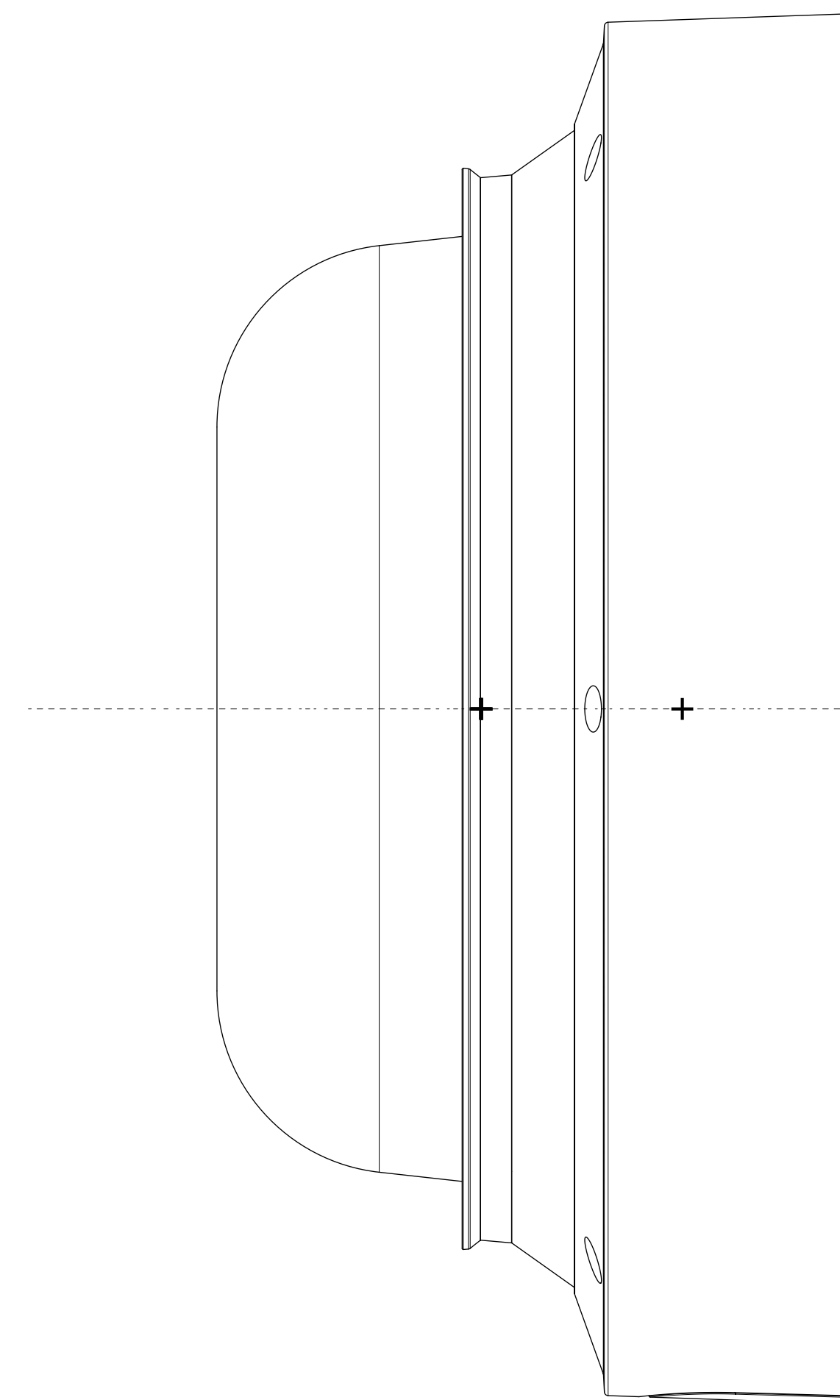
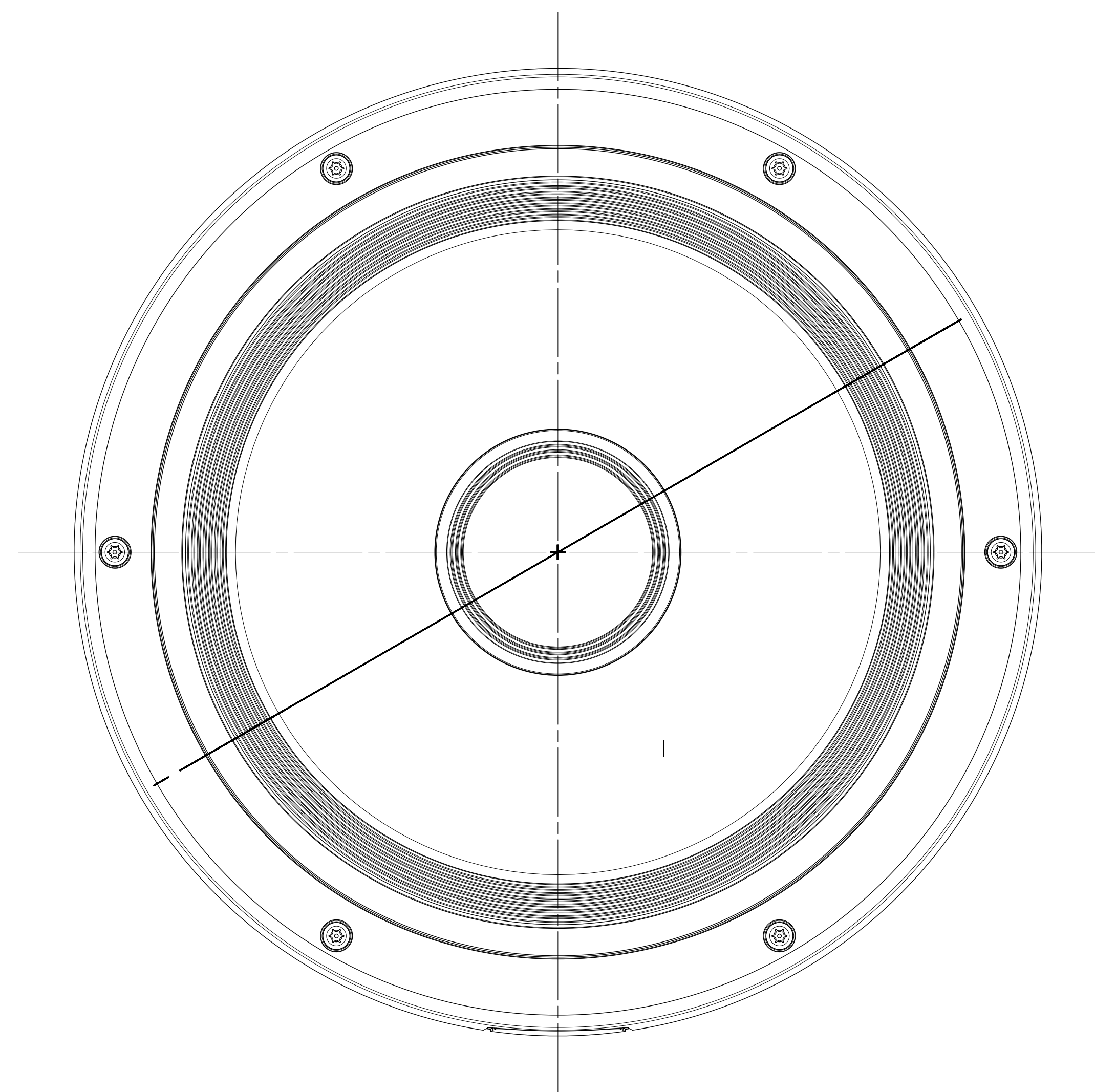
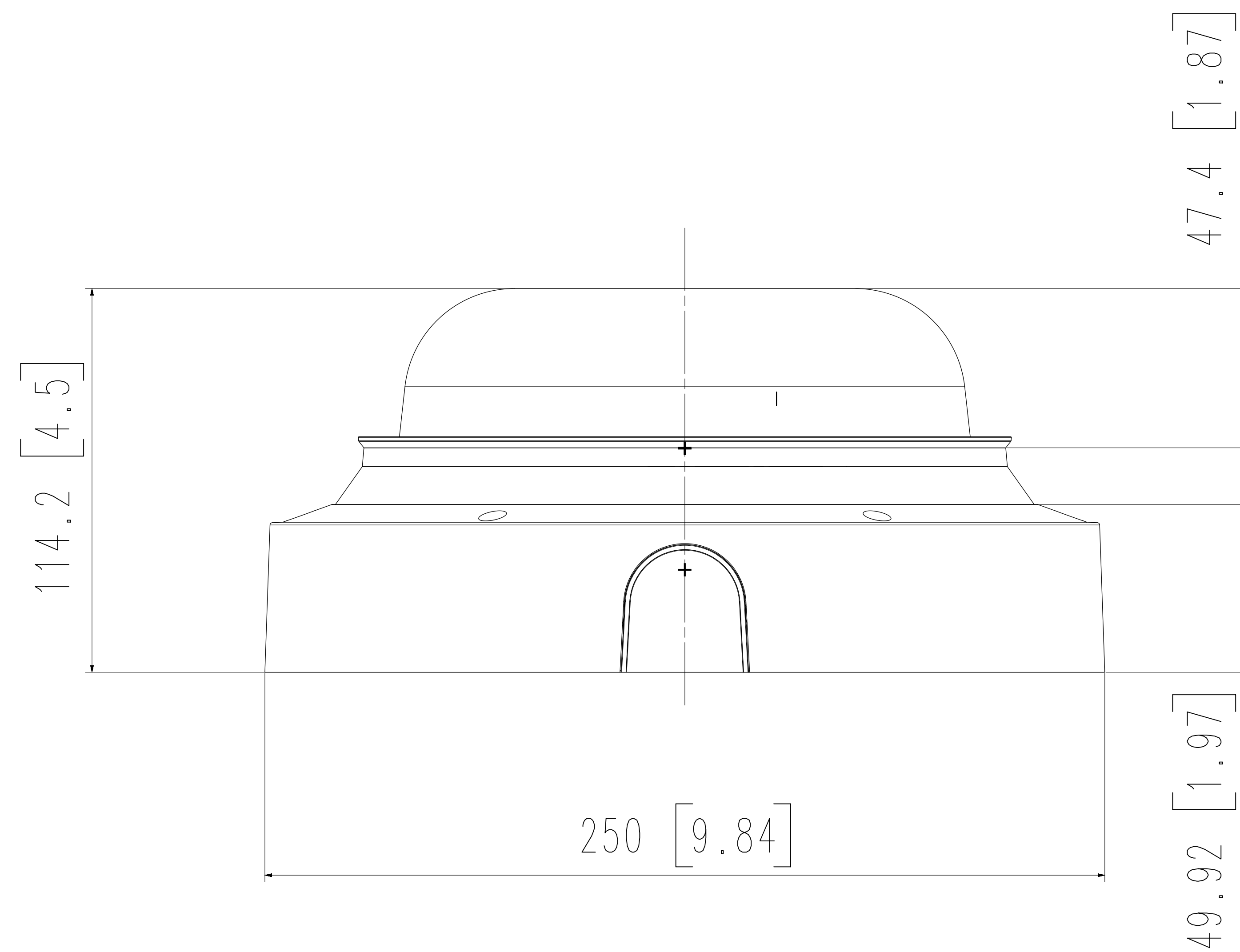
Opto-coupler (LS1) - Alternate	COSMO ELECTRONICS CORP	K1010	Isolation Voltage: 5000. Max. Operation Temperature: 115 deg. C	FPQU2	UL (E169586)	
Transformer(T4)	SAMWHA TECOM Co.,LTD	ASTEE20-12R0281	280 uH, 105 deg. C, See enclosure for more detail.	-	-	
Line filter (T3)	TNC CO.,LTD	CV320070SB5	7.0 mH, 105 deg. C, See enclosure for more detail.	-	-	
Camera module (Total 4ea)	DongGuan YuTong Optical Technology Co.,LTD.	YT0W1X55FB.ICR-8MP	Rated 5.0 V	-	-	
Heater (R1 to R16) (16ea) (CH1 to CH4, total 64ea)	Interchangeable	Interchangeable	10 ohm, 1/4 W each	-	-	
Rechargeable battery (BAT1)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium, Rechargeable, Max Charging Voltage, 3.4 V dc, Max Charging current: 300 mA	BBCV2	UL (MH15628)	
Rechargeable battery (BAT1) - Alternate	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	MS421R	Lithium, Rechargeable, Max Charging Voltage, 3.4 V dc, Max Charging current: 300 mA	BBCV2	UL (MH15628)	
Lithium Battery Protection Circuit	Interchangeable	Interchangeable	Diode (D1, 85 V, 300 mA) and Resistor (R84, 3.3Kohm) in series	-	-	
USB protect IC (U1)	TEXAS INSTRUMENTS INCORPORATED	TPD3S014	Rated 4.5-5.5 Vdc, 0.5 A, Current limit: 1.05 A	QVGS2	UL (E169910)	
Gasket - Dome cover and External Side Enclosure	Namyang Vina	O-VMQ-30-BK	Gasket Test was conducted under E158873-A6034	-	-	
Thermal Pad	KOMOTECH CO LTD	KGP-1(a)	Min. 2.0 mm thickness, rated V-0, 150 deg. C	QMFZ2/8	UL (E245303)	

Thermal Pad - Alternate	Interchangeable	Interchangeable	Min. 2.0 mm thickness, rated V-0, 150 deg. C	QMFZ2/8	UL	
Cable - Sensor to Main MCX (Total 4ea)	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 30 V, marked VW-1	AVLV2	UL	
Cable - Main to Network MCX Cable (BLACK)	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 30 V, marked VW-1	AVLV2	UL	
Cable – Main to Harness	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 30 V, marked VW-1	AVLV2	UL	
Cable - Sensor to Heater harness	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 30 V, marked VW-1	AVLV2	UL	
Cable - Main to Network, USB FFC	Interchangeable	Interchangeable	Rated minimum 105 deg. C, 60 V, marked VW-1	AVLV2	UL	
Cable - IR to Network (Total 4ea)	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 300 V, marked VW-1	AVLV2	UL	
Cable -alarm	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 300 V, marked VW-1	AVLV2	UL	
Cable - audio/mic	Interchangeable	Interchangeable	Rated minimum 80 deg. C, 30 V, marked VW-1	AVLV2	UL	
Connectors and Receptacles (Secondary circuits)	Interchangeable	Interchangeable	-	ECBT2	UL	
Connectors and Receptacles (Secondary circuits) -Alternate	Interchangeable	Interchangeable	Copper alloy pins housed in bodies of plastic rated Min. V-2	QMFZ2	UL	

PWB	EXPRESS ELECTRONICS LTD	14MV0	Min. V-0, 130 deg. C	ZPMV2	UL (E157925)	
PWB -Alternate	Interchangeable	Interchangeable	Min. V-0, 130 deg. C	ZPMV2	UL	
Outdoor Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum and minimum surface temperature specified, or Min. 55 deg. C to Max -40 deg. C if not specified.	PGDQ2 or PGJI2	UL	
LED (CH1:LD1 to LD3) (CH2: LD1 to LD3) (CH3: LD1 to LD3) (CH4: LD1 to LD3) (Total 9ea)	OSRAM Opto Semiconductors. GmbH	SFH4713A	VF = Max. 2.3 V, IF= Max. 1.0 A	-	-	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External View - 1
Photographs	03-02	External View - 2
Photographs	03-03	Internal View
Photographs	03-04	Camera Module View
Photographs	03-05	Camera Module Board
Photographs	03-06	IR LED Board
Photographs	03-07	Heater Board
Photographs	03-08	Main Board - Top
Photographs	03-09	Main Board - Bottom
Photographs	03-10	Network Board - Top
Photographs	03-11	Network Board - Bottom
Photographs	03-12	Internal Board View
Diagrams	04-01	Diagram
Manuals	06-01	Manual
Miscellaneous	07-01	Transformer (T4) Specification
Miscellaneous	07-02	Line Filter (T3) Specification
Miscellaneous	07-03	Label
Miscellaneous	07-04	Label (Risk Group 1)



3	MODEL 2	
2	PNM-C16083RVQ	'23.03.15
1	PNM-C32083RVQ	'23.03.15
No.	MODEL NAME	DATE
Unit:mm[inch] SCALE:1/1		

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 lighting 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 UL Listed Power Supply Unit marked "Class 2" or "LPS" or "PS2" and rated from PoE (55 Vdc), 0.6 A. (PNM-C32083RVQ/PNM-C16083RVQ)
16. This product is intended to be supplied by isolation power.
17. 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.
18. 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.
19. 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.
20. 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.
21. Installing or using the product in water can cause serious damage to the product.



22. Screen distortion could occur outside of the subject distance.
23. While encoding, a real time fps fluctuation of ± 1 fps could occur.
24. Although a rapid change in temperature could cause frost inside the dome, there will be no problem with the video.
25. This device has been verified using STP cable. The use of appropriate GND grounding and STP cable is recommended to effectively protect your product and property from transient voltage, thunderstroke, communication interruption.
26. The operating temperature of the product is -40°C to $+55^{\circ}\text{C}$ (-40°F ~ $+131^{\circ}\text{F}$).

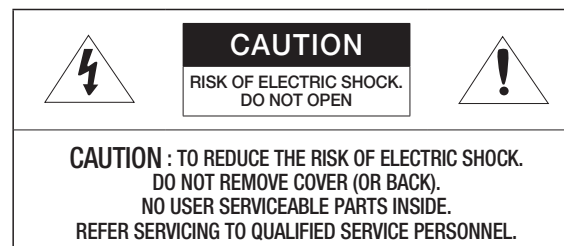
WARNING

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.

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.

The battery cannot be replaced.

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.

ATTENTION

IL Y A RISQUE D'EXPLOSION SI LA BATTERIE EST REMPLACÉE PAR UNE BATTERIE DE TYPE INCORRECT.
METTRE AU REBUT LES BATTERIES USAGÉES CONFORMÉMENT AUX 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.

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

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

When a new product box is opened (or during the initial use of the product), moisture might build up on the glass of the camera. The built-up moisture disappears naturally within a few hours after powered on.

Do not arbitrarily loosen or tighten the gore valve.

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

The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3at shall be a UL Listed device with the output evaluated as a Limited Power Source as defined in UL60950-1 or PS2 as defined in UL62368-1.

Unit is intended for installation in a Network Environment 0 as defined in IEC TR 62102. As such, associated Ethernet wiring shall be limited to inside the building.

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.

We do not guarantee the quality of third-party products (e.g. lenses, accessories) that you separately purchase.

In particular installation environments, there might be interference in radio communications. When interference of electromagnetic waves occurs between the product and radio communication device, it is recommended to keep a certain distance between the two or change the direction of the receiving antenna.

WARNING

To Prevent damage which may caused by IR LED, don't stare at operating lamp.
For below models only.

PNM-C32083RVQ

PNM-C16083RVQ

Risk Group 1 (Groupe de Risque 1)

WARNING	IR emitted from this product Do not stare at operating lamp
MISE EN GARDE	IR émis par ce produit Ne pas regarder fixement la lampe

Product tested against IEC62471

INSTALLATION

- !** ■ This camera is waterproof and in compliance with the IP66 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.

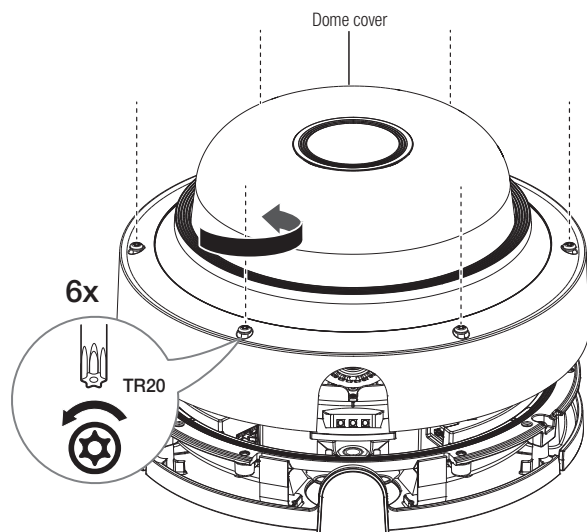
Precautions before installation

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

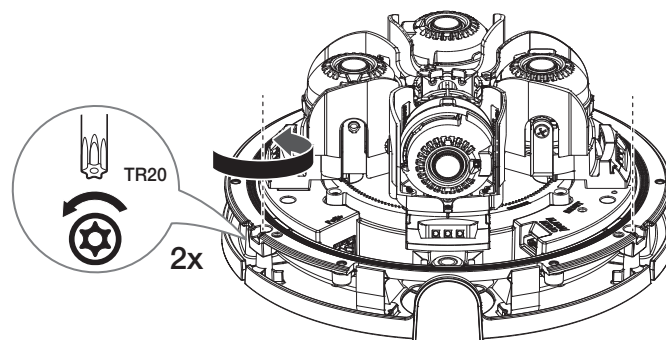
- It must be installed on the area (ceiling or wall) that can withstand 5 times the weight of the camera including the installation bracket.
- Stuck-in or peeled-off cables can cause damage to the product or a fire.
- For safety purposes, keep anyone else away from the installation site. And put aside personal belongings from the site, just in case.
- If the product is installed with excessive force, it may cause damage to the camera due to malfunction. Forcing assembly using non-compliant tools may damage the product.

Disassembling

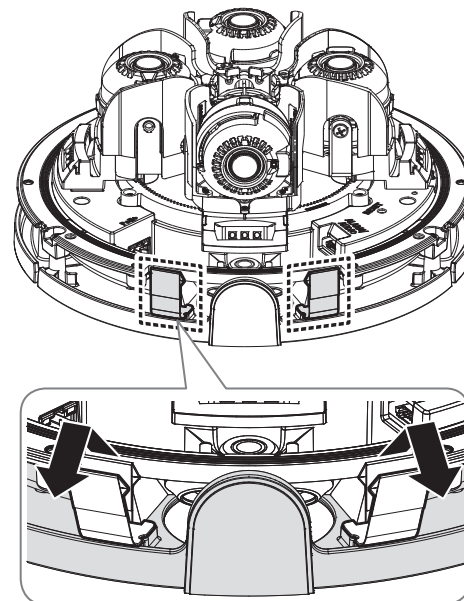
1. Remove the dome cover by turning the dome cover's fastening screws counterclockwise.
 - Note that it is not necessary to loosen the screws completely.



2. Loosen the fastening screw on the camera body.
 - You don't have to completely remove the screws.



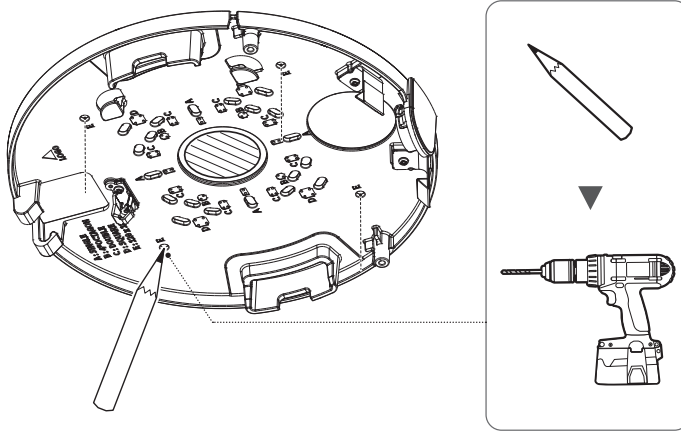
3. Remove the camera body and mounting plate by pulling the mounting clip, as shown in the figure.



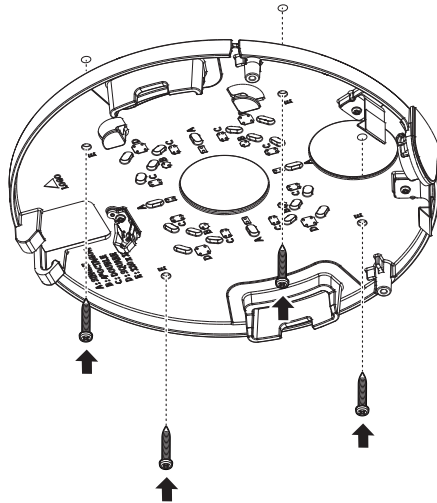
Installation (mount plate)

[Directly installing on ceiling]

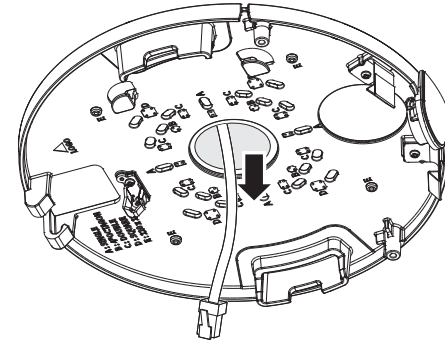
- 1-1. Place the mount plate on the desired location considering the direction to be monitored, mark the locations for the screw holes and cable holes, and then drill the holes.



- 1-2. Fix the mount plate using appropriate screws.

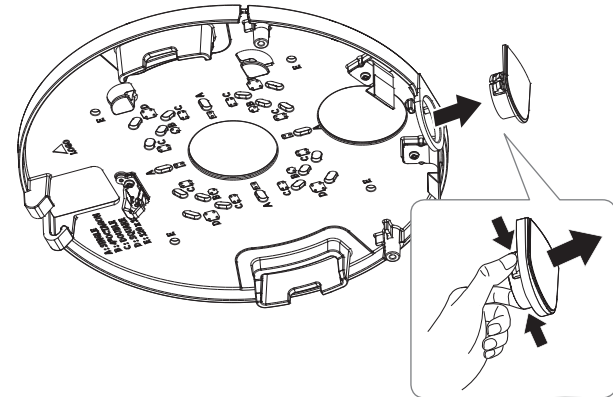


- 1-3. Take out the necessary cables from among the network and audio/alarm cables through the hole of the mount plate.



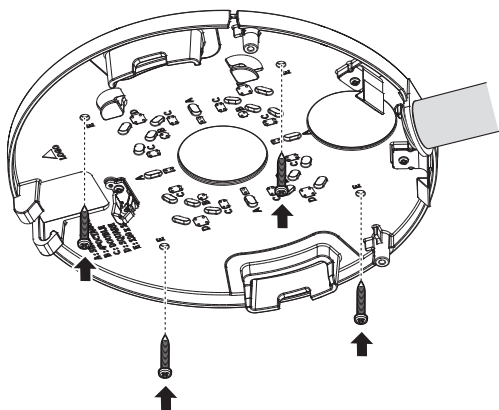
[Installing using pipe]

- 2-1. Place the mount plate on the desired location considering the direction to be monitored, mark the locations for the screw holes, and then drill the holes.
2-2. Separate the pipe cover of the mount plate by pressing its sides.

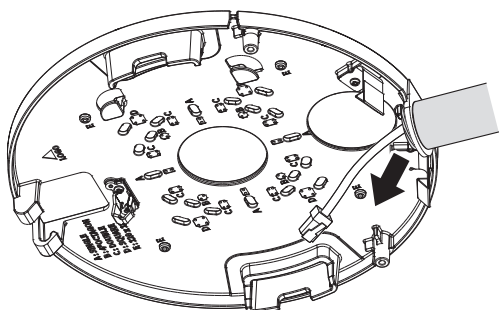


2-3. Place the pipe on the mount plate.

2-4. Fix the mount plate using appropriate screws.



2-5. Take out the necessary cables from among the network and audio/alarm cables through the pipe.

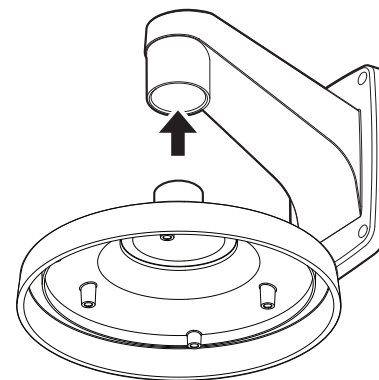


[Attaching to the unbundled adapter]

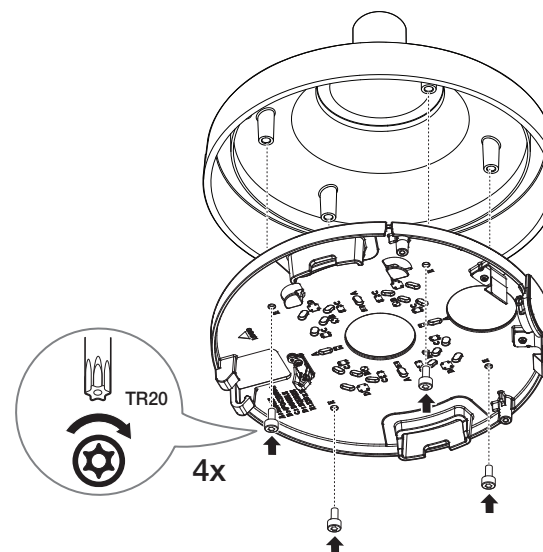
Choose and purchase a necessary one of the following options (unbundled) that is suitable to the installation site or for your convenience.

3-1. Install the hanging mount adapter to the wall mount.

- Wall mounts and hanging mount adapters are sold separately.

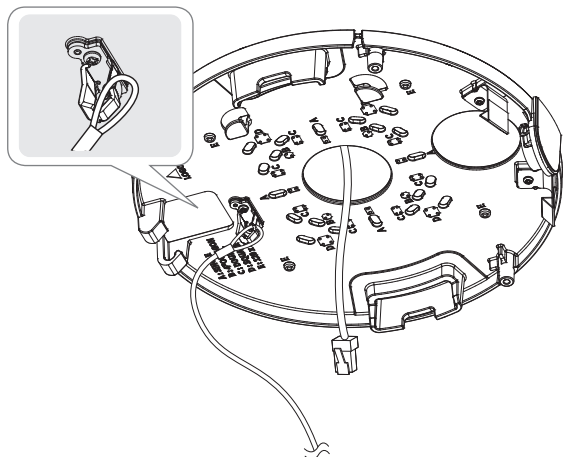


3-2. Install the mount plate to the hanging mount using the appropriate screws.



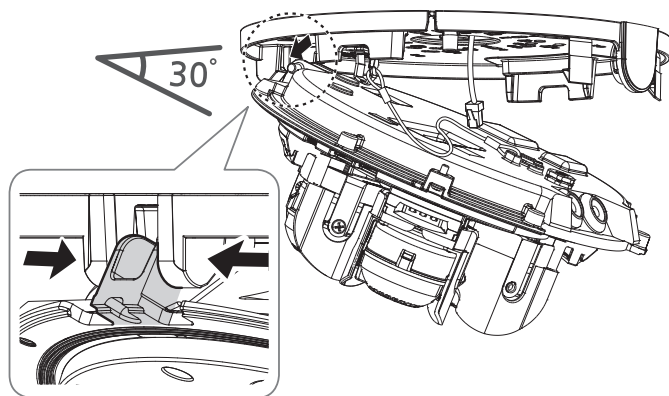
Installation (camera body and dome cover)

1. Connect the safety wire to the mount plate.

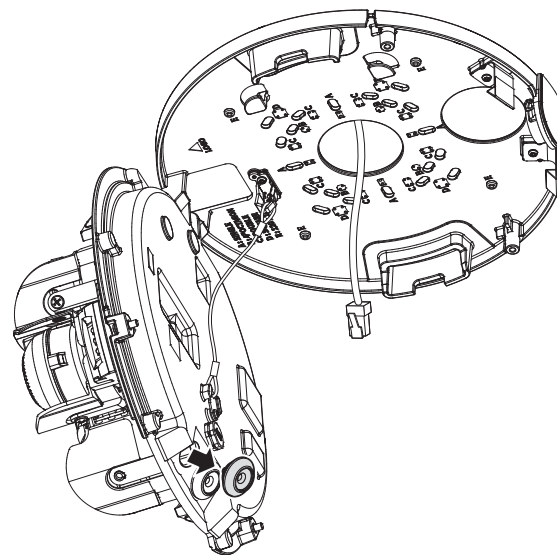


2. Mount the camera body to the mount plate.

- Mount it to fit the hinges as shown in the image.



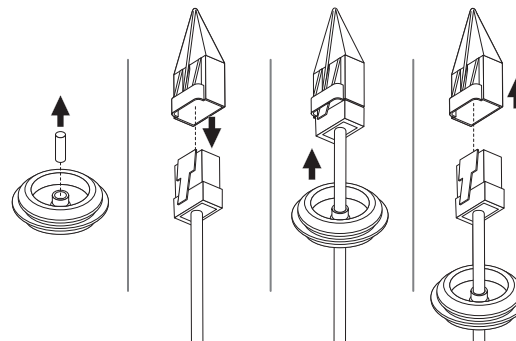
3. Pull out the cable bushing from the camera body, as shown in the figure.



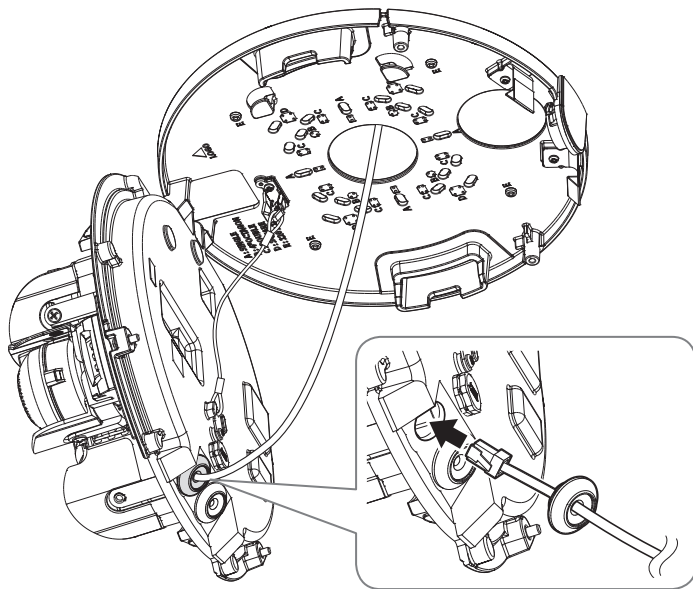
[Installing the network cable] (IP66)

- Use a cable bushing compliant with the network cable to be connected.
 - Camera main: use a cable with the diameter of Ø5 to 6.5
- You can only use a network cable with a diameter of Ø6.5 or less.

4. Remove the protruding part of the 1-hole cable bushing that was removed from the camera body.
5. Use the cap installer to route the network cable through the cable bushing.

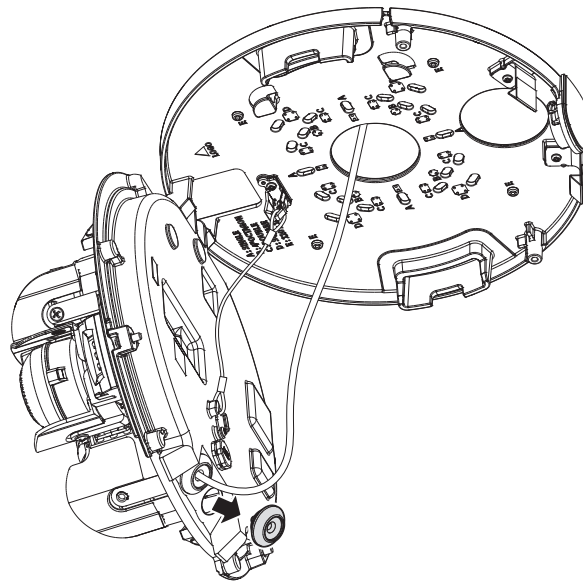


6. Insert the cable bushing of the network cable into the camera body.

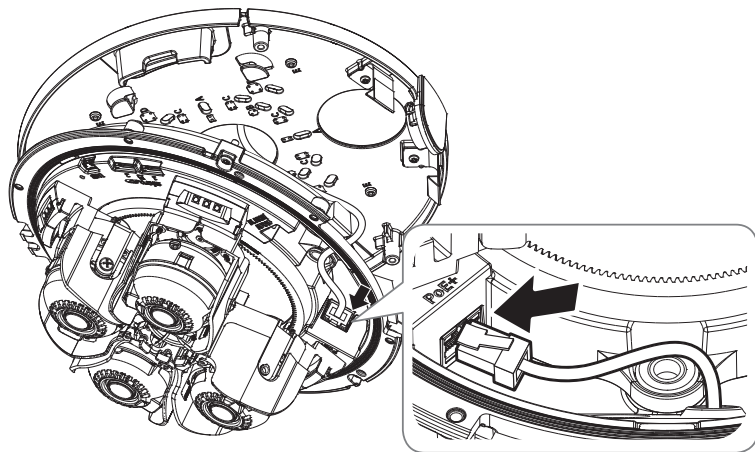


[Installing audio/alarm cables]

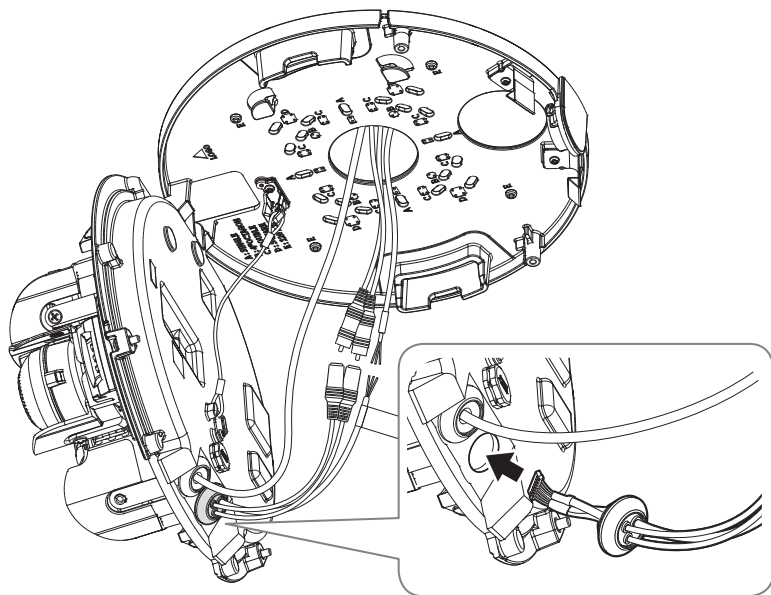
8. Pull out the cable bushing from the camera body, as shown in the figure.



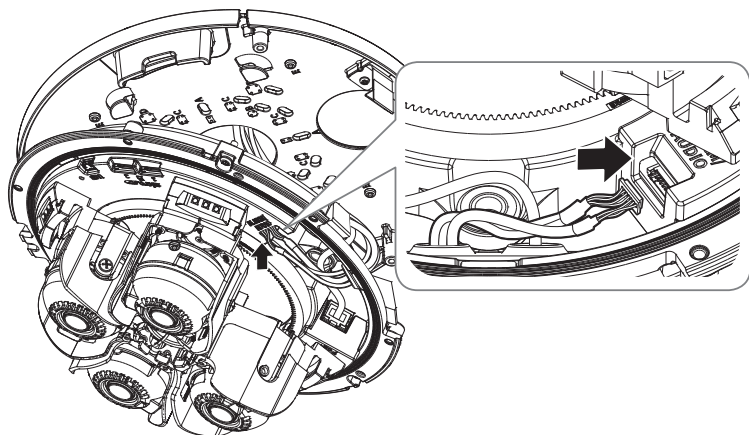
7. Connect the network cable jack to the PoE+ port of the camera.



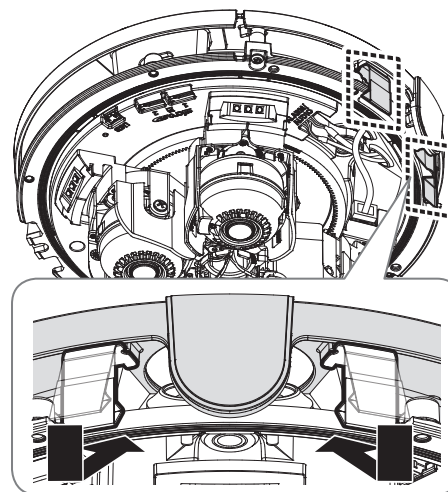
9. Insert the cable bushing of the audio/alarm cable(separately sold) into the camera body.



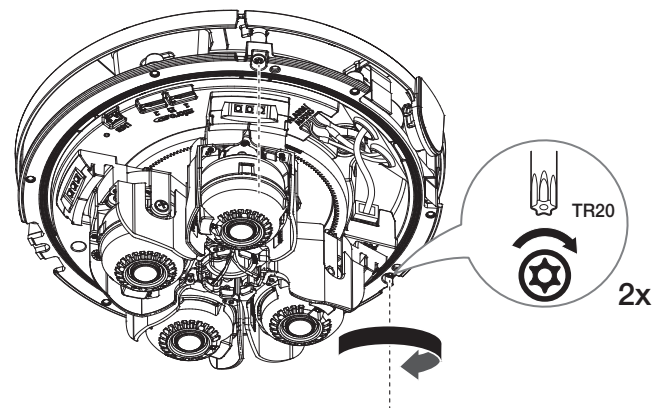
10. Connect the connector of the audio/alarm cable to its connection port.



11. Lift up the camera body and push the mounting clips until they click into place.



12. Using the fastening screws on the camera body, fix the camera body to the mount plate.

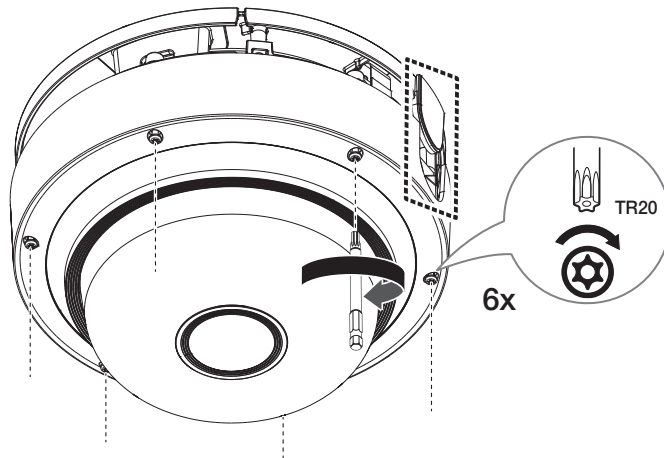


13. Adjust the lens to the desired direction by referring to "Adjusting the monitoring direction for the camera".

- If you tilt the lens, you may need to adjust the lens as this may block the screen.
- Connect a monitoring device to the USB port and then monitor and adjust it. (page 20)

14. Assemble the dome cover.

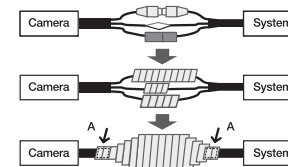
- When assembling the dome cover, align the pipe cover part to assemble it.
- To ensure there are no issues with waterproofing, tighten the fastening bolts tightly.



Outdoor installation

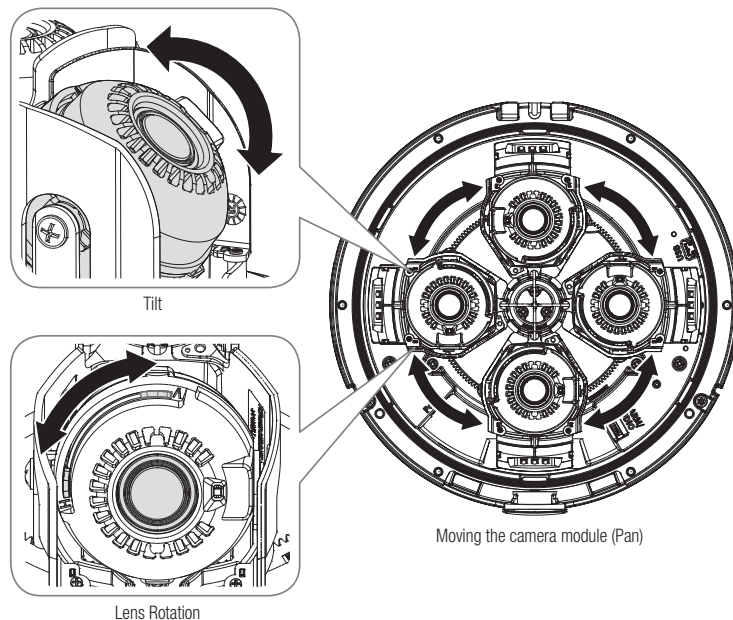
When you install it outside of the building, please waterproof it with waterproof butyl rubber tape (can be purchased in stores) so that water does not leak from the gap of the cable connected to the outside.

1. Connect network and alarm/audio cables, etc.
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.

Adjusting the monitoring direction for the camera



■ Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling. Here, moving the camera module along the rail is called "Pan", adjusting the slope of the camera module is called "Tilt", and rotating the camera module on the lens axis is called "Rotation".

- The rotation angle of Pan is -0 to $+360^\circ$ for each module.
- The rotation angle of Tilt is 0 to $+73^\circ$.
- The rotation angle of Rotation is 0° to $+90^\circ$.



- The image can be covered up by the camera case depending on the angle.
- Do not pan over the specified rotation angle. It might damage the cable leading to a product malfunction.

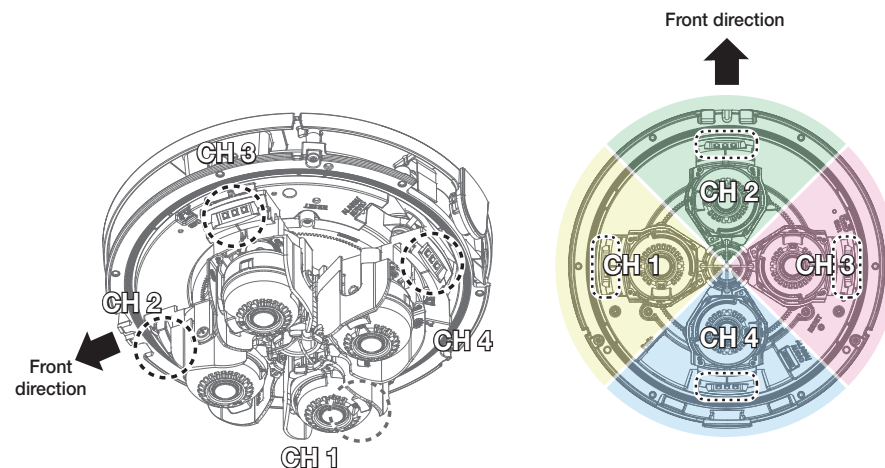
■ Methods of adjustment

1. After installing the camera in consideration of the direction to monitor, adjust the Pan angle along the bottom rail.
2. Adjust the horizontal angle so that the image does not appear to be reversed during rotation.
3. Adjust the tilt angle so that it points in the direction to be monitored.

Installation precautions when using the IR mode

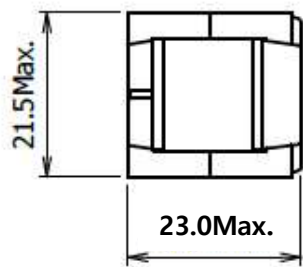
- <Auto1>: Optimized for IR light to radiate evenly when the center of the object is saturated.
- <Auto2>: Optimized for IR light to evenly radiate at the overall IR brightness.

[Example of installing the ceiling mount]

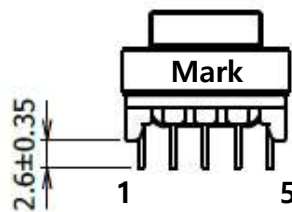
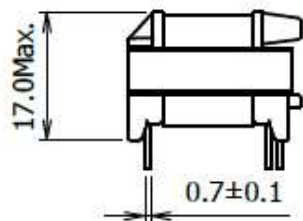


<Factory default direction>

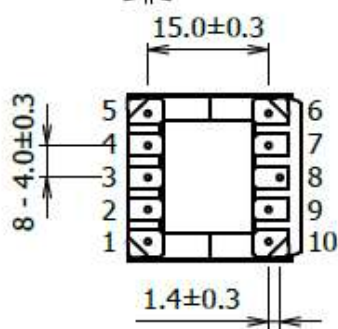
1-1. Dimension. [mm]



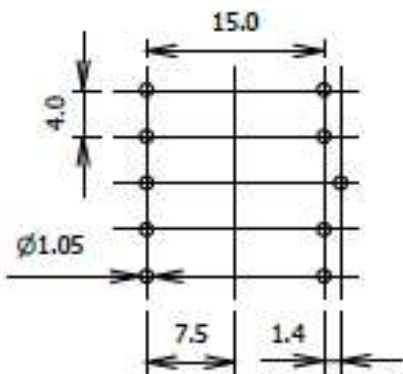
*Marking
281 Lot No.



The pin length not including solder ball.

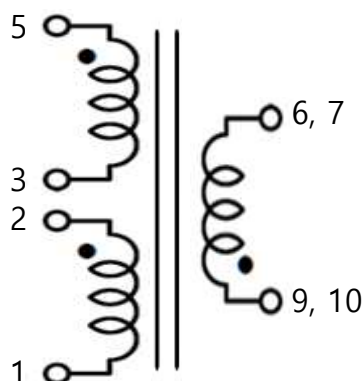


1-2. Suggested pad lay out.



Des. by	Che. by	Ins. by	App. by	Scale	Unit	Customer	HANWHA TECHWIN
S.H KIM	S.H LEE	B.H CHUN	S.K LEE	N/A	mm	Item	TRANSFORMER
R & D Center				THIRD ANGLE PROJECT 		Part No.	EP23-001032 (ASTEE20-12R0281)
						STDN	-

2-1 Winding Schematic.



* (●)Dot mark is winding start.

2-2 Winding Specification.

NO	BARRIER		TERMINAL				WIRE	Ts	권선방법	INSULATION		
	Pri./Sec.		S		F					재질	T/W	Ts
1	2	2	5		3		1UEW 0.25ØX3	14	2Layer Solenoid	P.E	0.025t/12.0mm	1
2	-	-	9	10	6	7	1UEW 0.40ØX4	10	2Layer Solenoid	P.E	0.025t/12.0mm	2
3	2	2	5		3		1UEW 0.25ØX3	14	2Layer Solenoid	P.E	0.025t/12.0mm	1
4	3	-	2		1		1UEW 0.20Ø	8	1Layer Solenoid	P.E	0.025t/12.0mm	2
Core Round Tape : 0.025t/6.0mm, 3Ts												

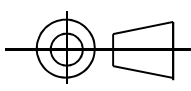
Des. by	Che. by	Ins. by	App. by	Scale	Unit	Customer	HANWHA TECHWIN
S.H KIM	S.H LEE	B.H CHUN	S.K LEE	N/A	mm	Item	TRANSFORMER
R & D Center				THIRD ANGLE PROJECT 		Part No.	EP23-001032 (ASTEE20-12R0281)
						STDN	-

3. Electrical Characteristics

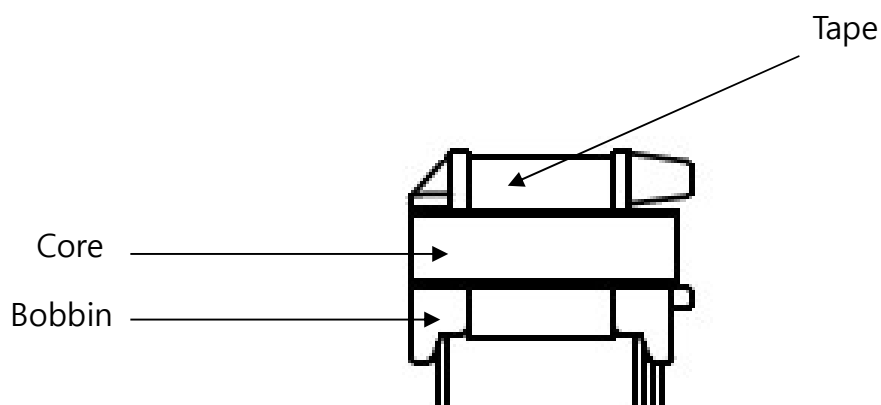
No	Item	Terminal	Spec	Remarks
1	Inductance	5 - 3	280 uH $\pm$ 30%	HP-4284A LCR Meter 100KHz, 1.0Vrms
2	Leakage Inductance	5 - 3 (6,7,9,10 short)	1.5 uH Max.	
3	D.C Resistance	5 - 3	42.0 m Ω Max.	Hioki 3220 m Ω Hi-tester or eqv.
4	Withstanding Voltage (C.C=10mA)	Pri. - Sec. Pri. Sec. - Core	AC 0.5KV(rms) 2~3sec	Puncture Tester TOS-8750 or eqv.
5	Insulation Resistance	Coil - Core	100M Ω Min at DC 500V.	Mega Ohm Meter TOS-8750 or eqv.

※ Note.

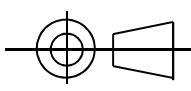
1. Test conditions of Electrical characteristics : 23°C ambient.
2. Operating temperature range -40°C to +105°C
3. Storage temperature range -40°C to +105°C

Des. by	Che. by	Ins. by	App. by	Scale	Unit	Customer	HANWHA TECHWIN
S.H KIM	S.H LEE	B.H CHUN	S.K LEE	N/A	mm	Item	TRANSFORMER
R & D Center				THIRD ANGLE PROJECT 		Part No.	EP23-001032 (ASTEE20-12R0281)
						STDN	-

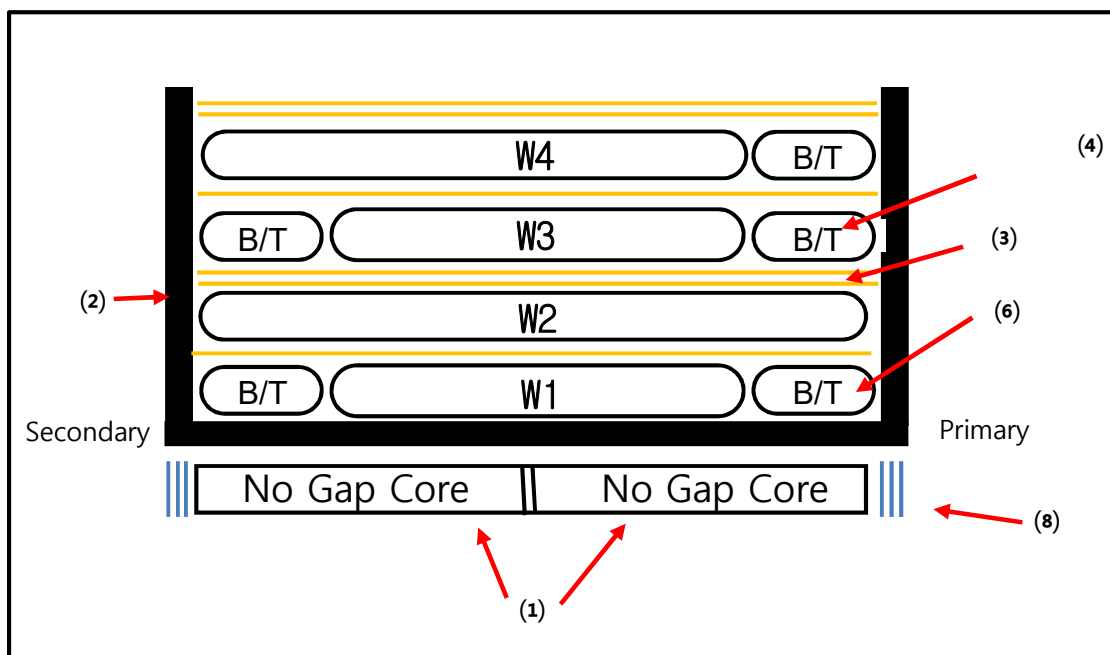
5. Material List.

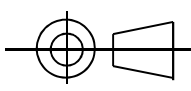


No.	Parts Name	Material	Type	Manufacturer	UL Yellow Card
1	Core	Ferrite, Mn-Zn	EE2020	AnHui Hualin Magnetic Samwha Electronics Ruyuan Dongyangguang	-
2	Bobbin	Phenolic	EE2020H-C 10P	Sumitomo Bakelite Hexion GmbH Chang Chun Plastics	E41429 E61040 E59481
3	Tape	Polyester	DTS-204 , 631S 0.025t/6.0mm(Yellow) 0.025t/12.0mm(Yellow)	Duck Sung Hitech Teraoka Seisakusho	E105147 E56086
4	Wire	Copper	1UEW 0.20Ø, 0.25Ø, 0.40Ø	PT Ewindo	E228267 E210918
5	Barrier Tape	Polyester	H-5673 2.0mm, 3.0mm	Tae Hwa Industrial	E92677
6	Solder	Solder BAR	LF-120	PT.Supra sukses trinusa	-
7	Varnish	Epoxy	DVB-2085(C)	Noroo	-

Des. by	Che. by	Ins. by	App. by	Scale	Unit	Customer	HANWHA TECHWIN
S.H KIM	S.H LEE	B.H CHUN	S.K LEE	N/A	mm	Item	TRANSFORMER
R & D Center				THIRD ANGLE PROJECT 		Part No.	EP23-001032 (ASTEE20-12R0281)
						STDN	-

6. Internal Construction



Des. by	Che. by	Ins. by	App. by	Scale	Unit	Customer	HANWHA TECHWIN
S.H KIM	S.H LEE	B.H CHUN	S.K LEE	N/A	mm	Item	TRANSFORMER
R & D Center				THIRD ANGLE PROJECT 		Part No.	EP23-001032 (ASTEE20-12R0281)
						STDN	-

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV320070SB5	0

2. ELECTRICAL CHARACTERISTIC

NO	ITEM	TERMINAL	SPECIFICATION			REMARKS
1	RATED VOLTAGE	LINE TO LINE	AC 300V			
2	RATED CURRENT	START-FINISH	2.0A			
3	INDUCTANCE	START-FINISH	16KHz	7.0mH	+ 50%-30%	HP-4194A 1V (25℃±2℃)
4	TEMPERATURE RISE	AT RATED CURRENT	55℃ MAX			
5	DC RESISTANCE	START-FINISH	141.0 mΩ MAX			HIOKI 3540 (25℃±2℃)
6	WITHSTANDING VOLTAGE	LINE TO LINE	AC 1,500V 1 MINUTE.			TOS-5101 CUT OFF CURRENT (5mA)

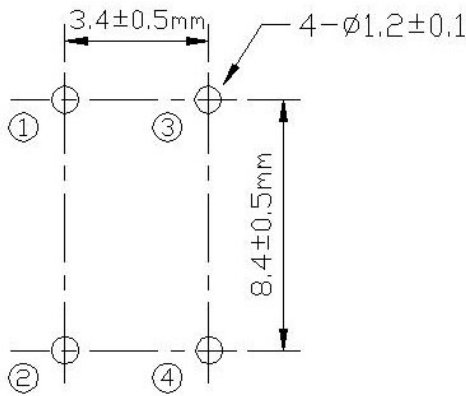
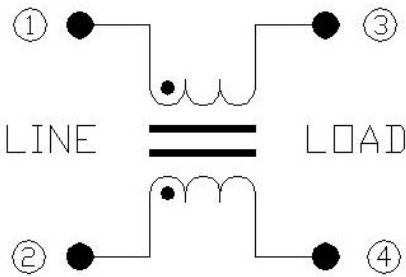
3. OPERATING TEMPERATURE RANGE

-40℃ TO +105℃ INCLUDING TEMPERATURE RISE.

4. KEEP TEMPERATURE RANGE

-40℃ ~ +105℃.

5. CIRCUIT DIAGRAM



PCB layout requirements

※PCB LAYOUT is strictly required..

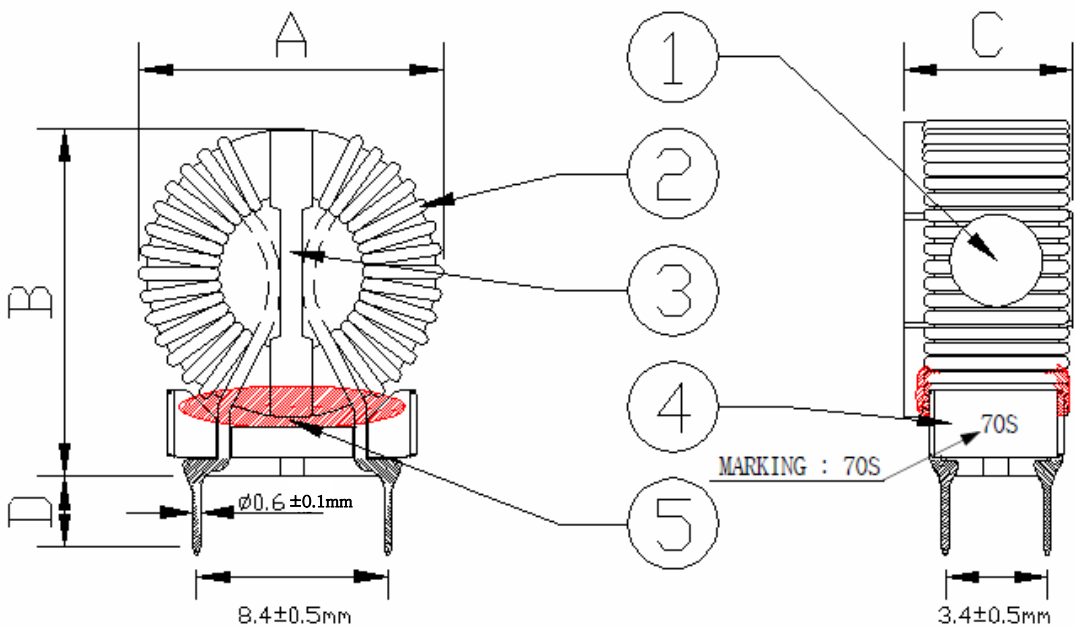
 TNC CO.,LTD	DESIGN	CHECK	APPROVAL	PAGE
	 R&D	 R&D	 R&D	3/15

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV320070SB5	0

6. WINDING SPECIFICATION

NO	TERMINAL		WIRE	TURNS	WINDING METHOD	UNBALANCE SPECIFICATION
	START	FINISH				
L1	1	3	UEW 0.40Φ	35±2Ts	HANDMADE	BETWEEN L1 AND L2 (0.2mH MAX)
L2	2	4				

7. SHAPE AND DIMENSION



DIMENSION	A	B	C	D
	16.0mm MAX	18.5mm MAX	10.0mm MAX	Not include solder fillet 3.3 ± 0.5mm

TNC TNC CO.,LTD	DESIGN	CHECK	APPROVAL	PAGE
	CHOL.J.K R&D	KANG.S.W R&D	KOO.J.H R&D	4/15

SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV320070SB5	0

8. MATERIAL LIST

No.	NAME	SPECIFICATION		MANUFACTURER	UL No.
1	Ferrite Core	MA100 R-13/7/5 M10K T13X7X5C		JFE Ferrite Corp SUZHOU TIANMING MAGENETIC TECHNOLOGY CO.,LTD	
2	Enamel Wire	UEW 0.40Φ / 35±2Ts	UEW	HWA-IL ELECTRONICS CO LTD	E140246
			UEW	YANTAI ROME ELECTRONIC CO LTD	E166187
			UEW	SIAM PACIFIC ELECTRIC WIRE & CABLE CO.,LTD	E142108
			UEW	LIAONING DONGGANG MAGNET WIRE CO LTD	E229247
3	Coil Separator	LCP L304T40		TORAY INDUSTRIES INC	E41797
		NYLON A 50H1(r3)(f2)		BASF Engineering Plastics (Shanghai) Co., Ltd.	E507491
4	Coil Base	Phenolic (PF 2736(a)(b)) UL 94 V-0 Class		Hexion GmbH	E61040
		Phenolic (T375HF) UL 94 V-0 Class		CHANG CHUN PLASTICS CO LTD	E59481
5	Epoxy	EPOXY RESIN	EA610A / EA610B	Chem Tech	
			HB5225A10/ HB5225B10	SUZHOU ROUTEN ELECTRONICS CO., LTD	
A	Marking	Bon Mar Que		T&K Toka	
		IR-254WTSPB/MC-254WT		DOMINO	

 TNC CO.,LTD	DESIGN	CHECK	APPROVAL	PAGE
				5/15

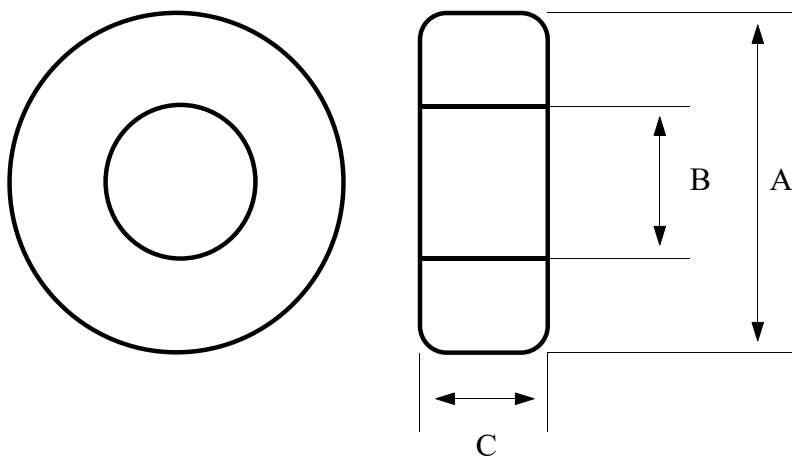
SPECIFICATIONS	ITEM	LINE FILTER	Rev
	TNC SPEC NO	CV320070SB5	0

14. FERRITE CORE SPECIFICATION

- Characteristics

Symbol	Unit	MA100 R-13/7/5	M10K T13X7X5C
μ_i	-	10,000±30%	10,000±30%
B _{ms}	mT	415	380
H _{cms}	A/m	3.0	6.0
B _{rms}	mT	76	120
T _c	℃	>115	>120
TANδ /μiac	*10 ⁻⁶	<1.9	<20
α _{μr}	*10 ⁻⁶ /℃	-0.5~2.0	-0.5~1.5
ρ	Ω.m	0.1	0.2
d	g/cm ³	5.0	4.9

- Dimension (Before Coating)



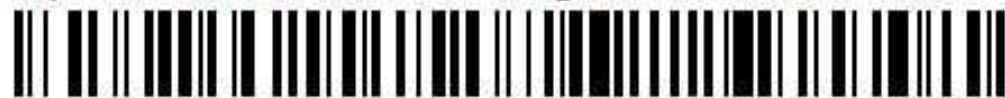
A: 13.0 ±0.35 B: 7.0 ±0.3 C: 5.0 ±0.3



NETWORK CAMERA, PNM-C32083RVQ

PoE(55V ) 0.6A

M/C: PNM-C32083RVQ/KEX Fac.ID:D



2023.07 S/N: Serial No.

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

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

HANWHA VISION CO.,LTD.

MADE IN KOREA

Rainproof Étanche
IP66

Risk Group 1 (Groupe de Risque 1)

WARNING

IR emitted from this product
Do not stare at operating lamp



MISE EN GARDE

IR émis par ce produit
Ne pas regarder fixement la lampe

Product tested against IEC62471





