



The table below describes the files that were selected to be included as part of this package.

Supplements, such as Figures and Illustrations, will appear as X number of Figures, X number of Illustrations, etc., rather than naming each one.

E158873-A6218-DescriptionUL
Figure-14-Total

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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:	QND-C8023R, QND-C8013R
Rating:	PoE (48 Vdc), 0.17 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.

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Prepared By: SoHyun 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 has been designed for INDOOR use and integrated a bracket for wall or ceiling mount. It is a commercial equipment supplied from PoE (Power over Ethernet) and installed by service personnel.

Model Differences

QND-C8023R is basic model.

QND-C8013R is identical to basic model except model designation, fixed lens.

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)	45
IP protection class	IPX0
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)	0.3

Technical Considerations

- ☐ The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 45 °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 : Exempt
- ☐ The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Additional Information

4791405503

- Maximum Normal Load: Continuous operation with IR LED on.

Additional Standards

The product fulfills the requirements of: N/A

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's Company's name, File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, dc, current)
Hard Copy	A. IMPORTANT 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 (48 Vdc), 0.17 A.
Website Manual - 2	The wired LAN hub providing power over the Ethernet (PoE) in accordance with IEEE 802.3.af 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.

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

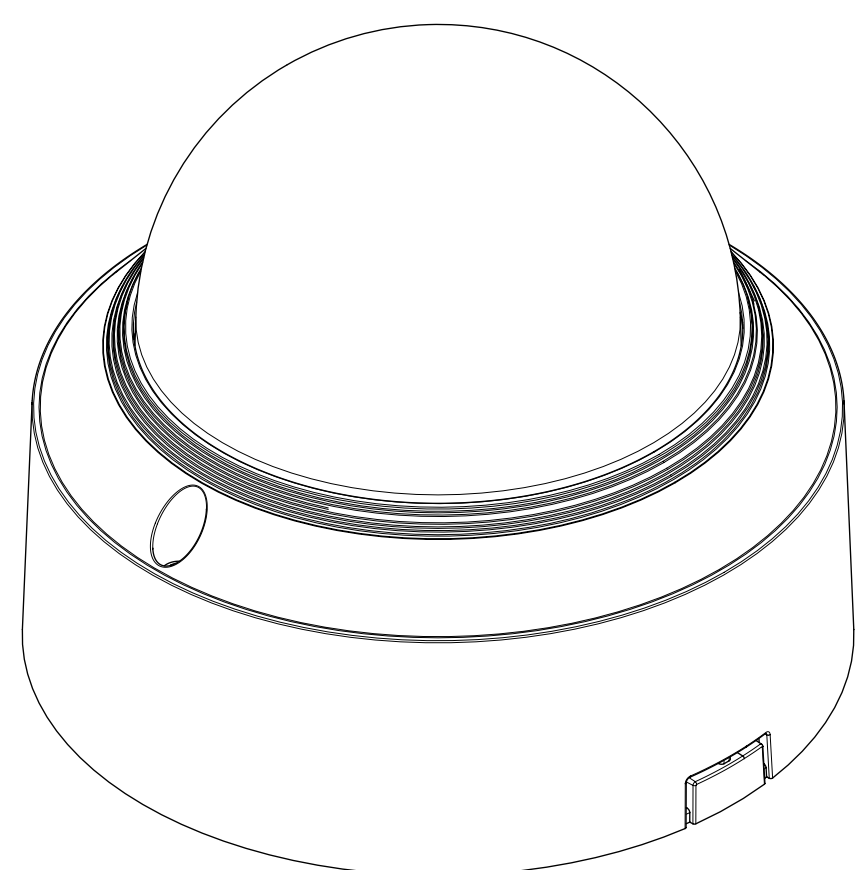
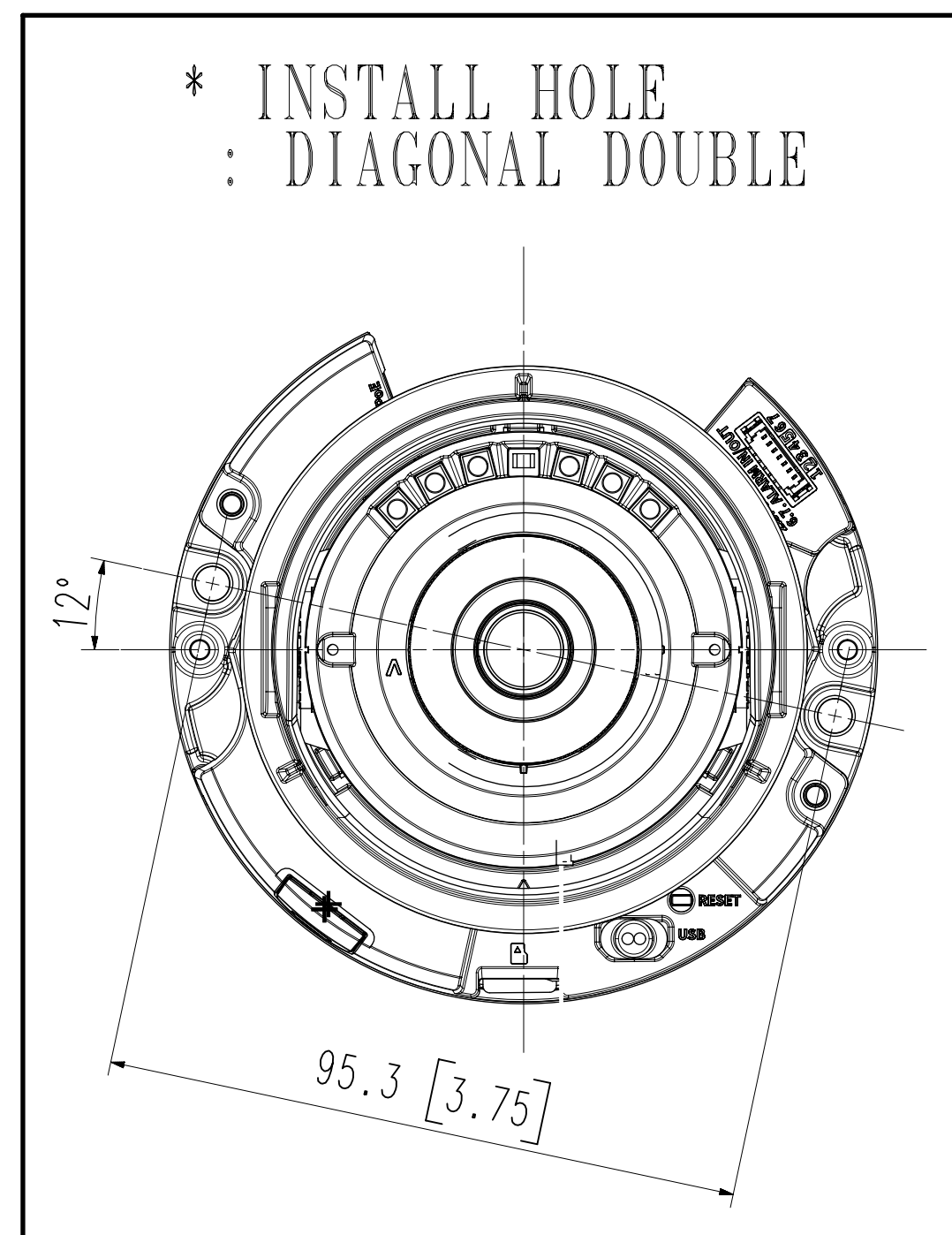
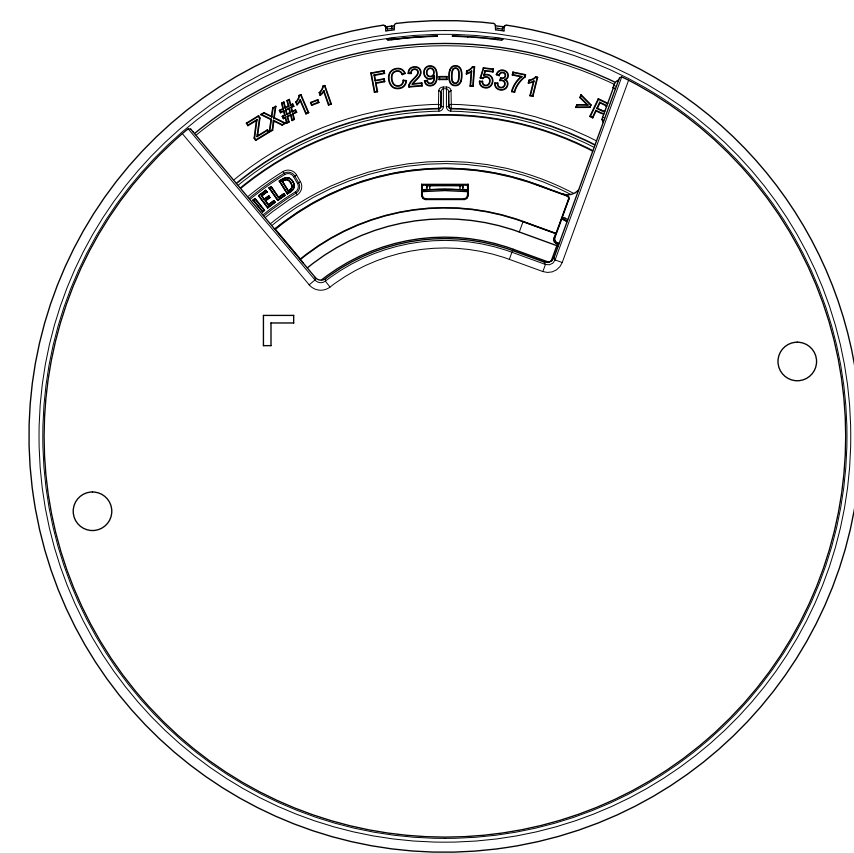
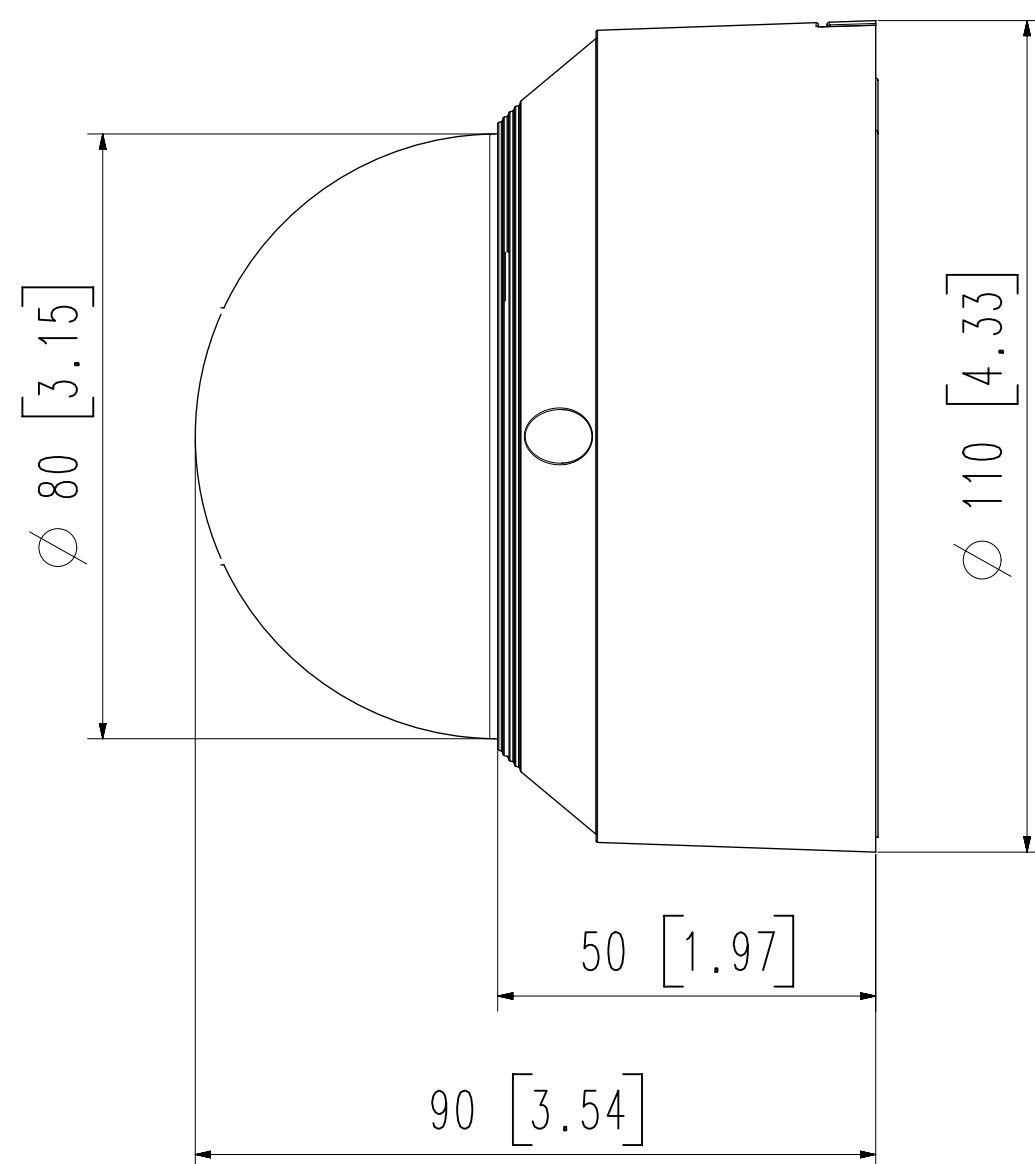
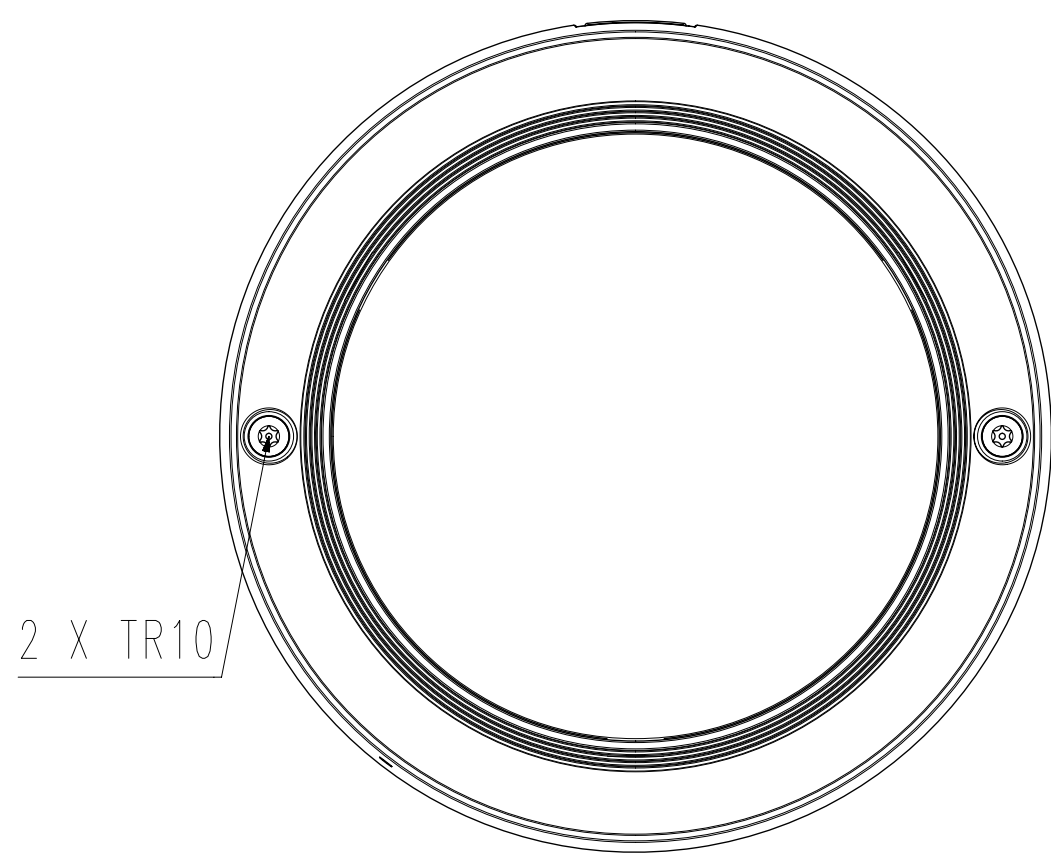
4.1.2	TABLE: List of critical components					Pass
Object / part No.	Manufacturer/ trademark	Type / model	Technical data	Product Category CCN(s)	Mark(s) of conformity	Supplement ID
Enclosure - Top (Plastic)	MITSUBISHI ENGINEERING- PLASTICS CORP	S-2000+(f1)	Min. 1.8 mm thickness, rated Min. V-2, 115 deg. C	QMFZ2	UL (E41179)	
Enclosure - Side (Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 2.0 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
Enclosure - Bottom (Metal)	Interchangeable	Interchangeable	Aluminum, Min. 2.0 mm thickness.	-	Tested in equipment	
Internal Plastic	Interchangeable	Interchangeable	Min. 1.6 mm thickness, rated Min. HB, 125 deg. C	QMFZ2	UL	
Opto-coupler (LS201)	LITE-ON TECHNOLOGY CORP	LTV-356T-BN (LTV- 356T(%)(c))	Isolation Voltage: 3750. Max. Operation Temperature: 110 deg. C	FPQU2	UL (E113898)	
Opto-coupler (LS201) - Alternate	COSMO ELECTRONICS CORP	KPC357NT	Isolation Voltage: 3750. Max. Operation Temperature: 115 deg. C	FPQU2	UL (E169586)	
Transformer (T1)	SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD	PDT2431SR	130 deg. C, See enclosure for more detail.	-	Tested in equipment	
Lens module (For type, QND-C8013R)	Sunny Optics (zhongshan) Co.,Ltd.	C7340E-232	Rated 3.0 - 6.0 Vdc	-	Tested in equipment	
Lens module (For type, QND-C8023R)	Sunny Optics (zhongshan) Co.,Ltd.	C7339E-232	Rated 3.0 - 6.0 Vdc	-	Tested in equipment	
Rechargeable battery (BAT1)	SEIKO INSTRUMENTS	ML414H	Lithium, Rechargeable, Max Charging Voltage:	BBCV2	UL (MH15628)	

	INC MICRO-ENERGY DIV		3.4 V dc, Max Charging current: 300 mA			
Lithium Battery Protection Circuit (BAT1)	Interchangeable	Interchangeable	Diode (D1, 85 V, 300 mA) and Resistor (R55, 3.3 Kohm) in series	-	Tested in equipment	
Thermal pad	KOMOTECH	KGP-1(a)	Min. 1.0 mm thickness, rated V-0, 150 deg. C	QMFZ2	UL (E245303)	
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	
Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum and minimum surface temperature specified, or Min. 45 deg. C if not specified.	PGDQ2 or PGJ12	UL	
LED (LD1, LD3)	ams-OSRAM AG	SFH-4718A	VF = Max. 2.05 V, IF= Max. 1 A	-	Tested in equipment	
LED (LD2, LD5)	LITE-ON TECHNOLOGY CORP	LTE-R38386L-YE5-DD	VF = Max. 2.5 V, IF= Max. 1 A	-	Tested in equipment	
LED (LD4, LD6)	Cybright IR LED Technology Co.,Ltd	XB-IR3838EU-I	VF = Max. 2.3 V, IF= Max. 1 A	-	Tested in equipment	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External view 1
Photographs	03-02	External view 2
Photographs	03-03	Internal view 1
Photographs	03-04	Internal view 2
Photographs	03-05	Internal view 3
Photographs	03-06	Network board view 1
Photographs	03-07	Network board view 2
Photographs	03-08	Camera view
Photographs	03-09	IR LED board view 1
Photographs	03-10	IR LED board view 2
Diagrams	04-01	Diagram
Manuals	06-01	Manual
Miscellaneous	07-02	Transformer (T1) Specification
Miscellaneous	07-03	Label

The following Page(s) are related to Diagrams-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.



3	MODEL 2	
2	MODEL 1	QND-C8023R
1	BASIC MODEL	'24.06.19
No.	MODEL NAME	QND-C8013R
Unit:mm[inch] SCALE:1/1		Hanwha Vision

The following Page(s) are related to Manuals-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

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 (48Vdc), 0.17A.
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. Although a rapid change in temperature could cause frost inside the dome, there will be no problem with the video.
23. The operating temperature for the QND-C8013R/QND-C8023R products is -10°C to +45°C(14°F to +113°F).
24. The operating temperature for the QNV-C8013R/QNV-C8023R/QNO-C8013R/QNO-C8023R products is -30°C to +55°C(-22°F to +131°F).

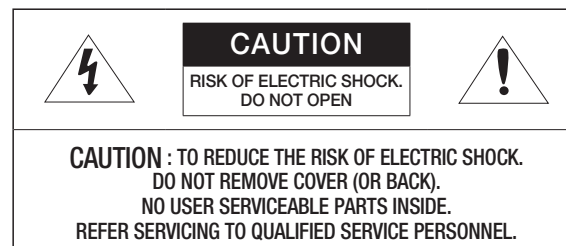
WARNING

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.

Prohibition of battery abuse

- Do not install and use the wrong type of battery.
- Do not leave the battery in a mechanically crush or cut it because it can explode.
- Do not leave the battery in a high temperature environment.
- Do not leave the battery in a low-pressure environment.

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.

CAUTION

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 802.3af 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

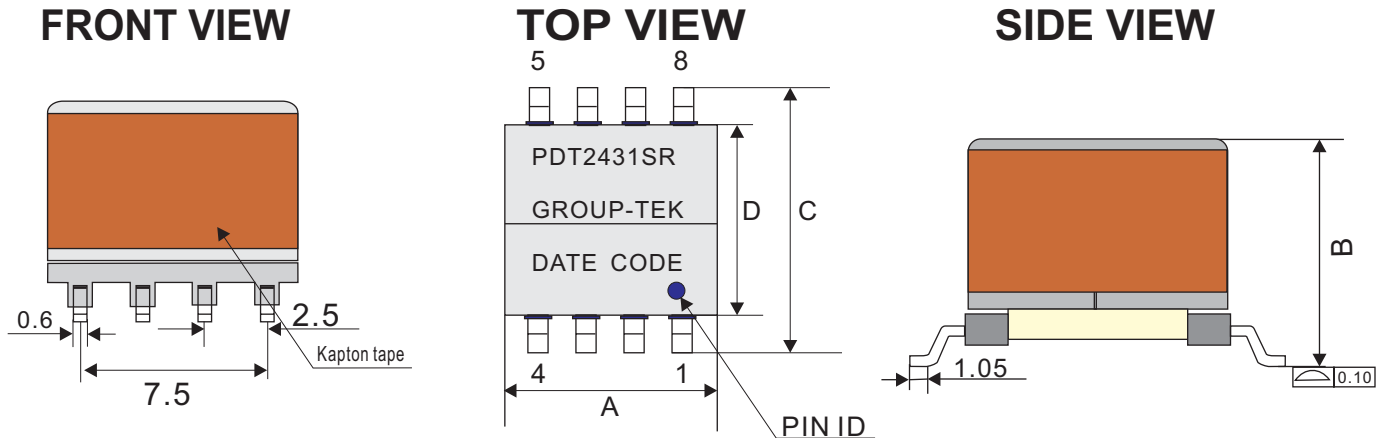
※ Please read this manual for the safety before using of goods and keep it in the safe place.

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.

The following Page(s) are related to Miscellaneous-02. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

2. Mechanical Dimensions:



Note:

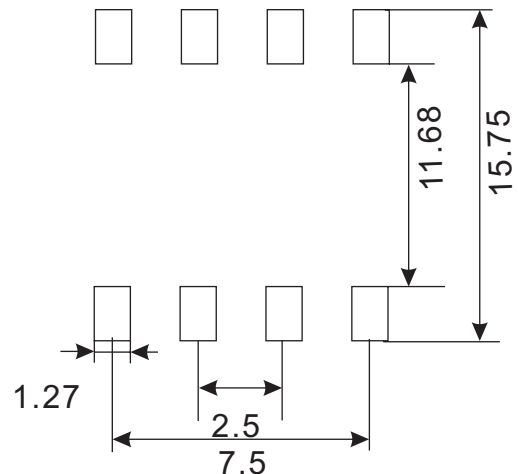
1. Wrap 2Ts of 6mm tape around the finished part.

Unit: mm

A MAX	B MAX	C MAX	D TYP
12.7	11.43	15.24	10.60

SUGGESTED PAD LAYOUT

Unit: mm Tolerances: +/-0.2



3. Electrical Characteristics :

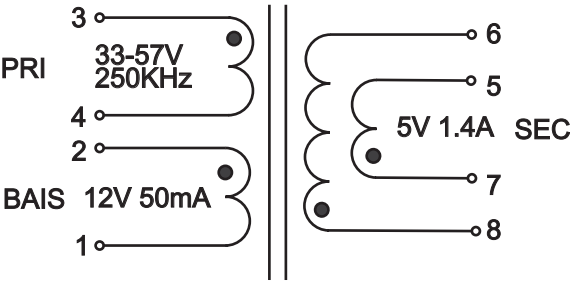
Specifications Test: at 25 °C. Operating Temperature: -40 to +125°C			
NO.	ITEM	TEST CONDITION	SPECIFICATION
1	Inductance	(3-4)@200kHz, 0.1v	155uH+/-10%.
2	Inductance	(2-1)@200kHz, 0.1v	30uH+/-15%.
3	Inductance	(7-5)///(8-6)@200kHz, 0.1v	5.3uH+/-15%.
4	Leakage Inductance	(3-4) with shorted other@200kHz, 0.1v	3.6uH MAX.
5	DCR	(3-4) @ 25°C	0.414 Ω Max.
6		(7+8)-(5+6) @ 25°C	0.06Ω Max.
7		(2-1) @ 25°C	0.822Ω Max.
8	HI-POT	PRI TO SEC	1500Vac 1mA 3Sec.
9	T/R	(3-4):(9+10-7+8):(2-1)	33:6:14±2%.

5.Winding Information:

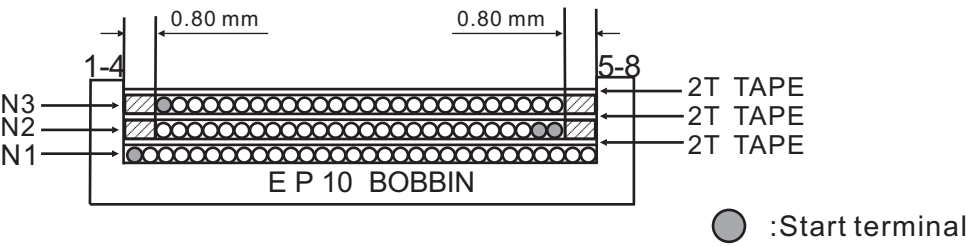
WINDING SEQ.	ST-FN	WIRE/FOIL	TURNS	WRAP INSUL.	MARGIN TAPE	SLEEVE	NOTE
1	3--4	0.30mm 2UEW	33	2T w6.0mm	N/A	N/A	1
2	8--6 7--5	0.30mm 2UEW R 0.30mm 2UEW N	6	2T w6.0mm	2T W0.80mm	N/A	1
3	2--1	0.23mm 2UEW	14	2T w6.0mm	2T W0.80mm	N/A	1

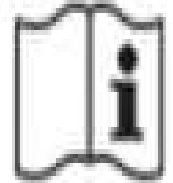
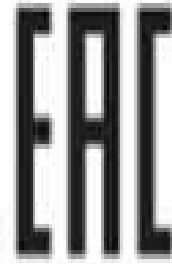
NOTE :
1. -Place the bobbin pin 1 right side of operator.

6.Schematic:



7.Winding construction

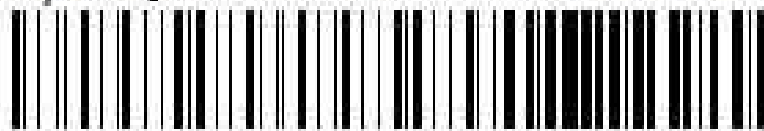




NETWORK CAMERA, QND-C8023R

PoE(48V...) 0.17A

M/C: QND-C8023R/KEX Fac.ID:D



DATE S/N: XXXXXXXXXXXXXXXX

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

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

HANWHA VISION CO., LTD.

MADE IN KOREA









