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Please find attached the related material on Project

For your convenience, the below describes the related updates:

E158873-A6238-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 THERMAL CAMERA
Model:	TNM-C2822TDR, TNM-C2812TDR, TNM-C2712TDR, TNM-C2722TDR
Rating:	PoE (48 Vdc), 0.23 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.

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Prepared By: SoHyun Lee / Project Handler Reviewed By: SeulKi Park / 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 THERMAL CAMERA is designed for outdoor or indoor use, wall or ceiling use with mounting brackets.

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

Model Differences

TNM-C2822TDR is basic model.

TNM-C2722TDR is identical to basic model except model name.

TNM-C2812TDR, TNM-C2712TDR are identical to basic model except model designation and 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	Outdoor location
Pollution degree (PD)	PD 2
Manufacturer's specified T _{ma} (°C)	55 Outdoor: minimum -30
IP protection class	IP 67
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)	0.653

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 : Exempt
- 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 : -30 °C to 55 °C

Additional Information

4791557968

- Maximum Normal Load: Continuous operation (Operate the camera through networked equipment with white LED on.)

4791730661

No test was considered necessary in order to below revision.

- Addition of Models. (TNM-C2712TDR, TNM-C2722TDR)

- Update of Models and Model differences.

- Correction of Lens module (TNM-C2812TDR, TNM-C2712TDR) and Lens module (TNM-C2822TDR, TNM-C2722TDR) in CCL.

Additional Standards

The product fulfills the requirements of: IEC 62471:2006, IEC 60529:1989 +A1:1999+A2:2013

Markings and Instructions

Clause Title	Marking or Instruction Details
Equipment identification marking – Manufacturer identification	Listee's Company's name, Trade Name, File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, current)
Outdoor enclosure type	"Rainproof", IP67
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.~~) or QR code.
(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), 0.23 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 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 models					
BD1.3	Electric Strength Test Exemptions – This test is not required for the following models:					
	All models					
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 models					

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
Internal part (Plastic)	LOTTE CHEMICAL	HN-1068(+)(f1)	Min. 1.5 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
Internal part (Plastic) - Alternate	Interchangeable	Interchangeable	Min. 1.5 mm thickness, rated Min. HB	-	-	
Enclosure - Lens cover (Plastic)	CHIMEI CO LTD	PC-6715VT(f1)	Min. 1.5 mm thickness, rated Min. V-0, 80 deg. C.	QMFZ2	UL (E56070)	
Enclosure - Case (Metal)	DASANVINA	Interchangeable	Aluminum, Min. 1.5 mm thickness.	-	-	
Enclosure - Case (Plastic)	LOTTE CHEMICAL	HN-1068(+)(f1)	Min. 1.5 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2	UL (E115797)	
Opto-coupler (LS1)	LITE-ON TECHNOLOGY CORP	LTV-217 (Type: LTV-217-C-G)	Isolation Voltage: 3750. Max. Operation Temperature: 110 deg. C	FPQU2	UL (E113898)	
Opto-coupler (LS1) - 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	PDT25239SR	77 uH, 130 deg. C, See enclosure for more detail.	-	-	
Heatsink - 1	DASANVINA	Interchangeable	Aluminum (Silver), Overall size of 61x57xH18.4 mm, Min. 2 mm thickness, See	-	-	

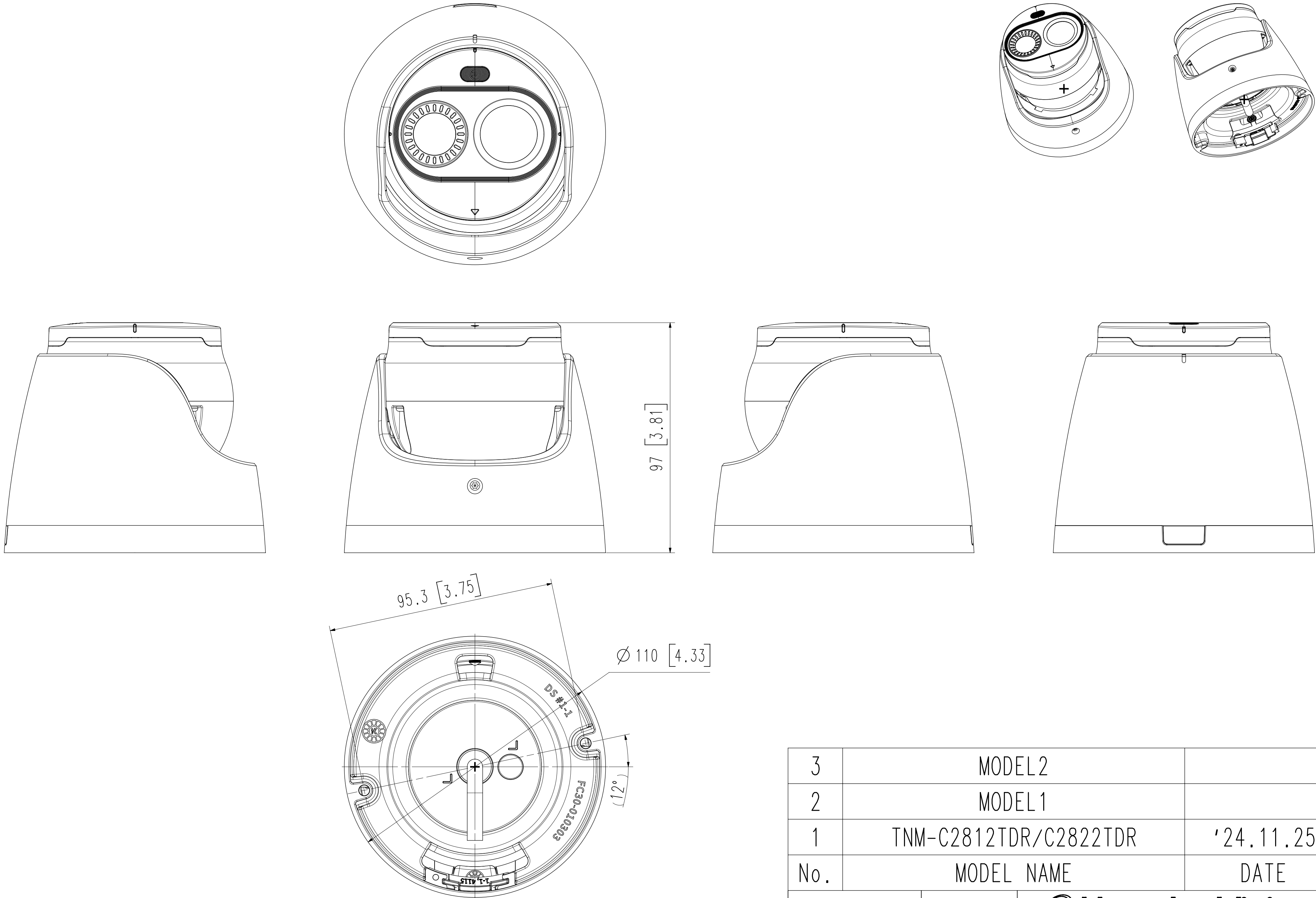
			enclosure for more detail.			
Heatsink - 2	DASANVINA	Interchangeable	Aluminum (Black), Overall size of 76x68xH11.25 mm, Min. 2 mm thickness, See enclosure for more detail.	-	-	
Lens module (TNM-C2812TDR, TNM-C2712TDR)	SUNNY OPTICS(ZHONGSHAN) CO LTD	C7340E-232	Rated 3.0-6.0 Vdc	-	-	
Lens module (TNM-C2822TDR, TNM-C2722TDR)	DONGGUAN YUTONG OPTICAL TECHNOLOGY CO LTD	YT0X4W51-8MP+H34+IR0907	Rated 3.5-6.0 Vdc	-	-	
Rechargeable battery (BAT1)	SEIKO INSTRUMENTS INC MICRO-ENERGY DIV	ML414H	Lithium, Rechargeable, Max Charging voltage, 3.4 Vdc, Max Charging current: 300 mA	BBCV2	UL (MH15628)	
Lithium Battery Protection Circuit (BAT1)	Interchangeable	Interchangeable	Diode (D1, 90 V, 250 mA) and Resistor (R103, 3.3 Kohm) in series	-	-	
Thermal pad	KOMOTECH CO LTD	KGP-1(a)	Min. 0.2 mm thickness, rated V-0, 105 deg. C	QMFZ2	UL (E245303)	
PWB (Power, CMOS, LED, Thermal)	EXPRESS ELECTRONICS LTD	14MV0	Min. V-0, 130 deg. C	ZPMV2	UL (E157925)	
PWB (Main)	HANNSTAR BOARD CORP	MV-4	Min. V-0, 130 deg. C	ZPMV2	UL (E89382)	
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	PGDQ2 or PGJ12	UL	

			maximum and minimum surface temperature specified, or Min. -30 deg. C to Max. 55 deg. C if not specified.			
LED (LD1)	OSRAM	GW CSSRM3.EM	VF = Max. 3.2 V, IF= Max. 1.8 A	-	-	
GASKET for LED Window	NAMYANG VINA	O-VMQ-30-BK	Gasket Test was conducted under E158873-A6034	-	-	
GASKET for MAIN-MID	NAMYANG VINA	O-VMQ-40-BK	Gasket Test was conducted under E158873-A6034	-	-	
GASKET for FRONT-CASE	NAMYANG VINA	O-VMQ-30-BK	Gasket Test was conducted under E158873-A6034	-	-	
GASKET for THERMAL	NAMYANG VINA	O-VMQ-40-BK	Gasket Test was conducted under E158873-A6034	-	-	
GASKET for VISIBLE	NAMYANG VINA	O-VMQ-50-GR	Gasket Test was conducted under E158873-A6034	-	-	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External View
Photographs	03-02	Internal View
Photographs	03-04	Lens View
Photographs	03-05	Main PWB View
Photographs	03-06	Power PWB View
Photographs	03-07	CMOS PWB View
Photographs	03-08	LED PWB View
Photographs	03-09	Thermal PWB View
Diagrams	04-01	Enclosure drawings
Diagrams	04-02	Heatsink drawings - 1
Diagrams	04-03	Heatsink drawings - 2
Manuals	06-01	Manual
Miscellaneous	07-03	Label
Miscellaneous	07-04	Transformer (T1) Specification

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

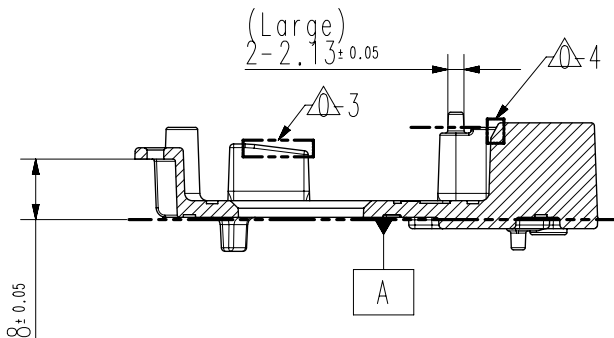
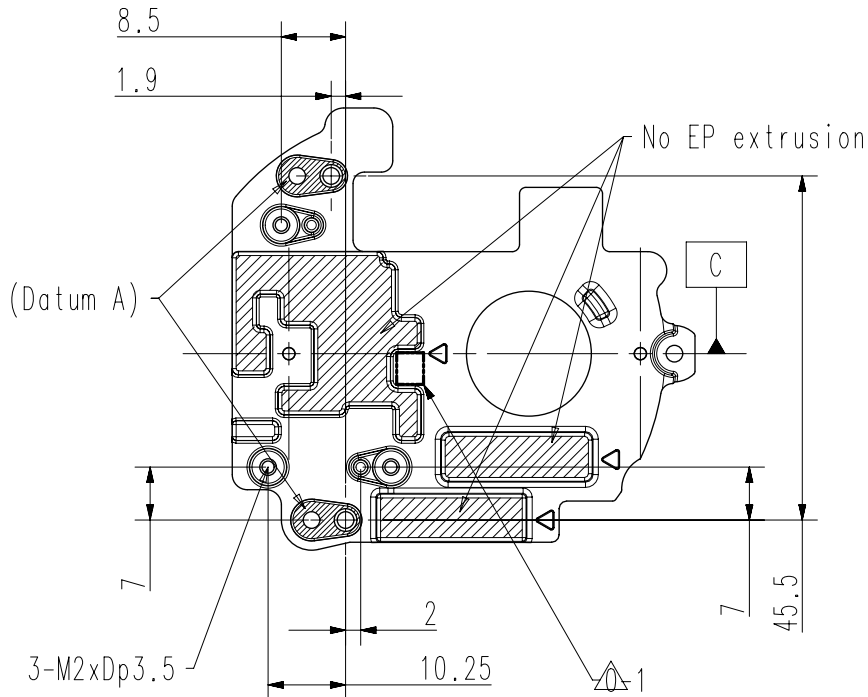
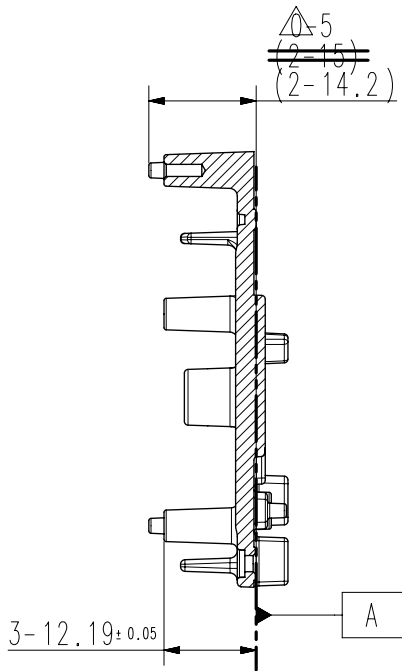
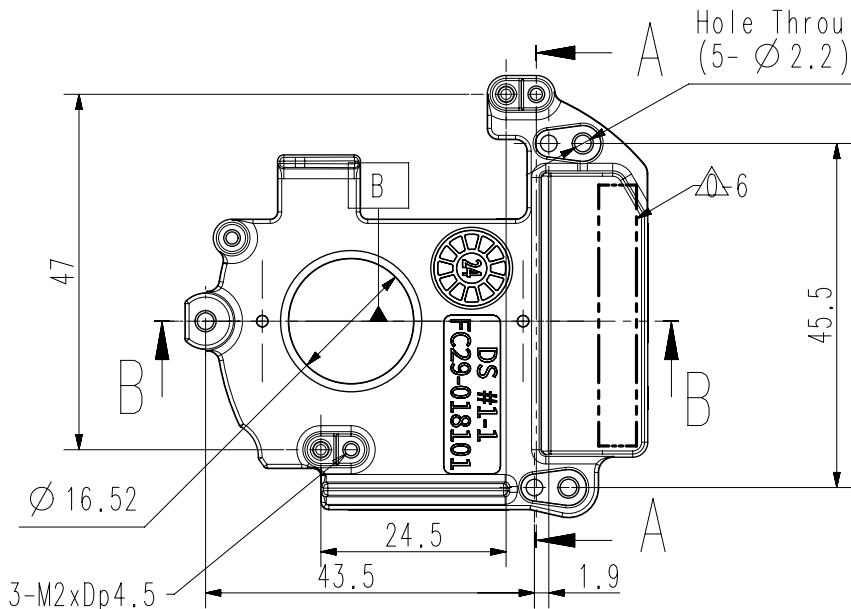
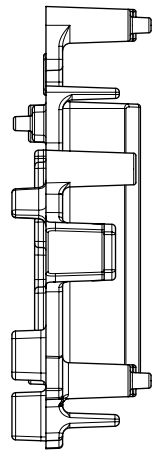
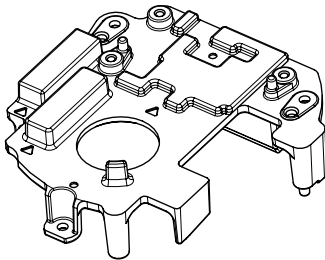
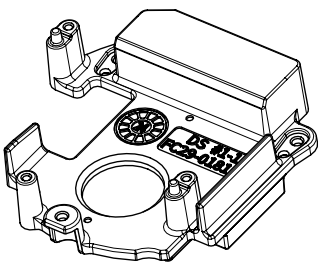
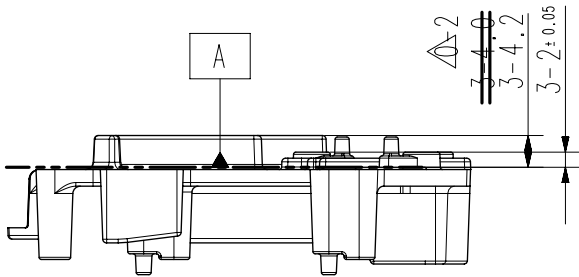


3	MODEL 2	
2	MODEL 1	
1	TNM-C2812TDR/C2822TDR	'24.11.25
No.	MODEL NAME	DATE
Unit:mm[inch] SCALE:1/1		Hanwha Vision

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

This parts should not contain any substances which are specified in AH60-0033K

NO	PART NAME	CODE NO.	MATERIAL	Q'TY	REMARK
1	HOLDER-2CAMERA-TOP_TNM-C28x2TDR	FC29-018101A	Check note	1	-



SECTION A-A

SECTION B-B

Coating Specification

CODE No.	A
Color	Standard
	D20192403178
	Code
Printing	Name
	Metal Powder Ivory
Process	Color
	Pantone 422C
Process	Casting→Cutting→Sanding→Machini
	ng/Tapping→Degrease→Chromate

NOTE:Die-Casting

1. Material and Basic wall thickness : ADC, t2.0
2. Gate, P/L, Ejector Pin location must be handled with HVC designer.
3. Ejector pin stain must be less than 0.3 depth (凹), no flash is allowed.
4. Undescribed edge round must be less than R0.5, undescribed corners must be less than R0.3.
5. No Deformation, Air bubble, Shrinkage is allowed.
6. Every Flash on P/L must be less than 0.1.
7. Undescribed draft angles must be less than 0.5°.
8. * marks (Key dimensions) must be carefully handled.
9. Surface cutting level of Gate and Over-Flow must be equivalent with other surface cutting level.
10. Part Name, Code Number, Mold Number, Material, Model Name must be carved on the inner side of the part.
- Location and Specs. must be handled with HVC designer.
11. External look and printing specification must follow separately distributed Design Specification data.
- Including Surface cutting, Chromate, Sanding, Spray, Silk Print specifications.
12. Reliability must satisfy HVC standards.
13. Delivery packing specifications must be discussed separately.
14. All other issues must be handled with HVC designer.

STANDARD TOLERANCE

DIV	Lvl 1	Lvl 2	Lvl 3	Lvl 4	Lvl 5
0-16	±0.05	±0.1	±0.1	±0.2	±0.3
16-63	±0.05	±0.1	±0.2	±0.3	±0.4
63-250	±0.1	±0.2	±0.3	±0.4	±0.4
250-1000	±0.2	±0.3	±0.4	±0.5	±0.6



A3

CHANGE

Δ-1	Removal extrusion partially To prevent interference ('24.11.20.CH01.E.S)
Δ-2	Extrude more by 0.2mm For more I-PAD compression
Δ-3~4	Add Chamfer (8x1) For easy Cable-arrangement Add Chamfer (2x1) For easy Cable-arrangement ('24.12.06.CH01.E.S)
Δ-5	Decrease Boss height By 0.6mm
Δ-6	Cut for extruded area To make gap for PC-Sheet attachment. For Heat dissipation ('24.12.16.CH01.E.S)

UNIT

mm

DESIGN

CHECK

APPROVAL

PART
NAME

HOLDER-2CAMERA-TOP_TNM-C28x2TDR

SCALE

1 / 1

CHOI.E.S

PARK.M.H

CHOI.Y.S

MODEL
NAME

MODEL NAME

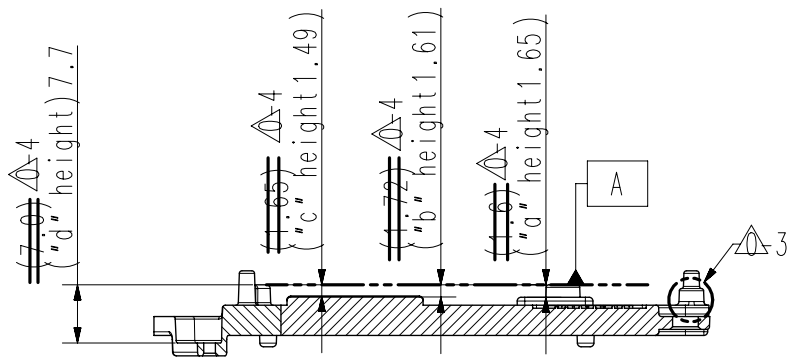
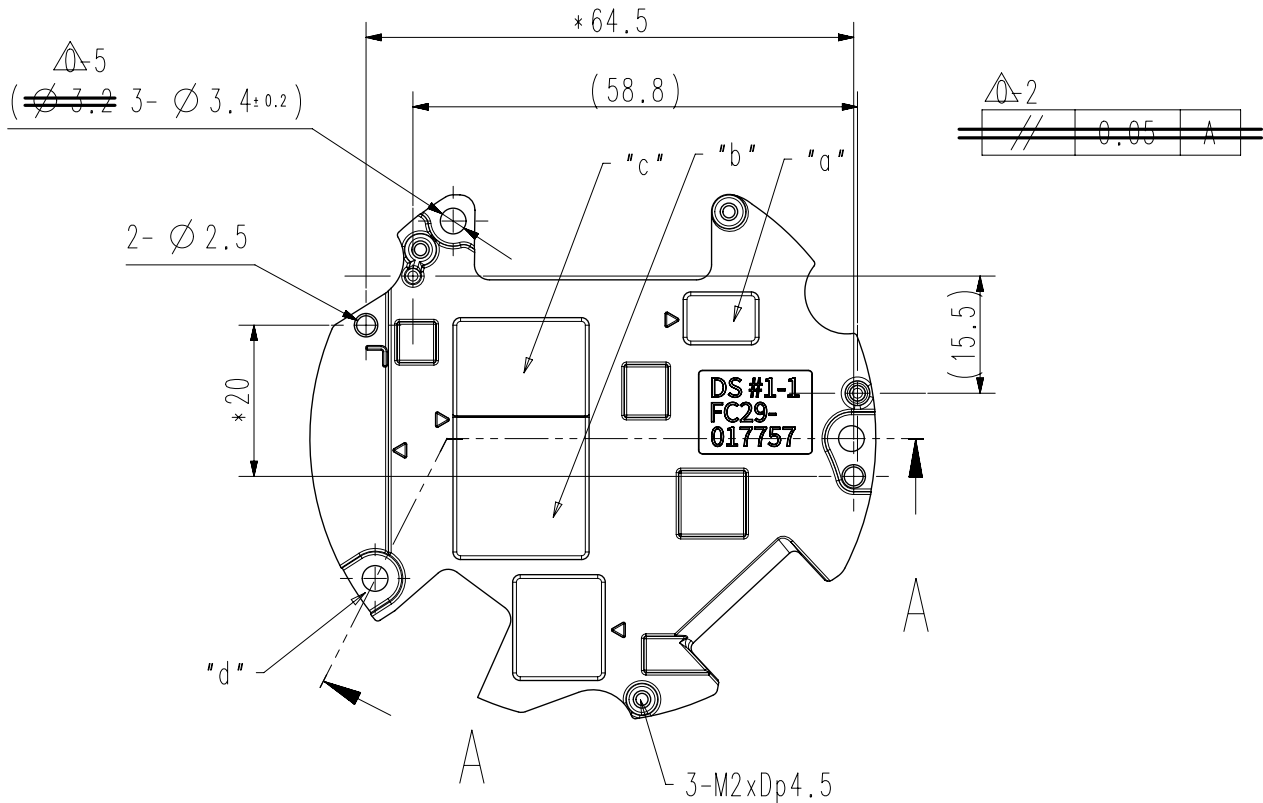
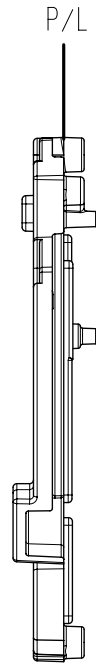
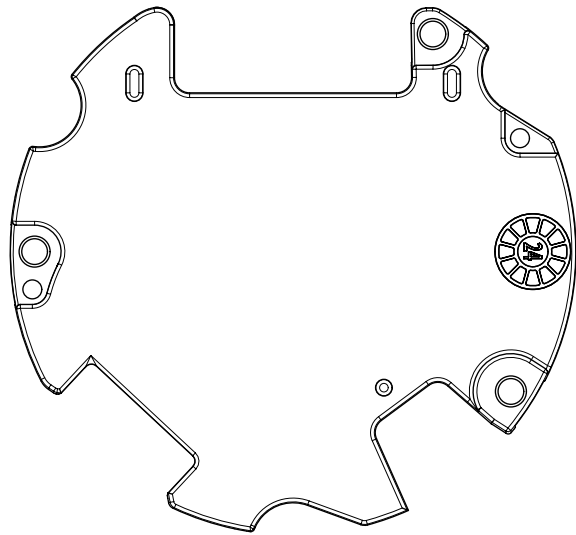
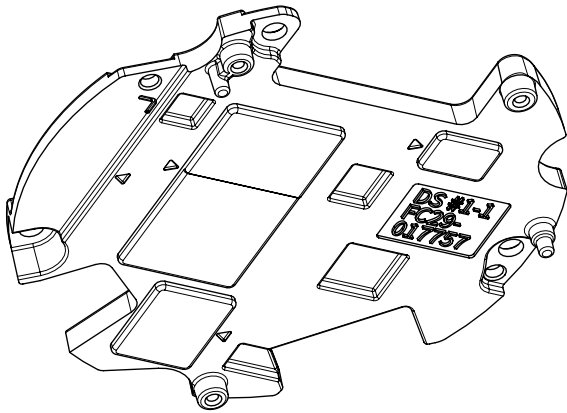
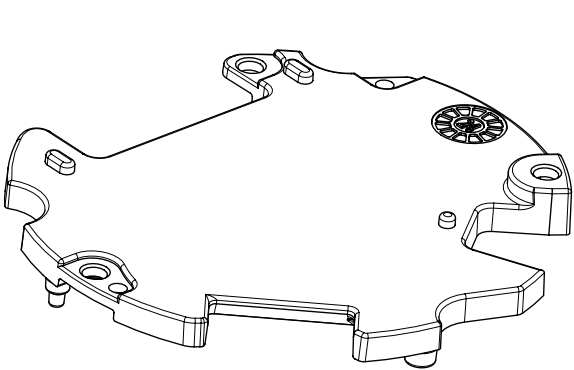
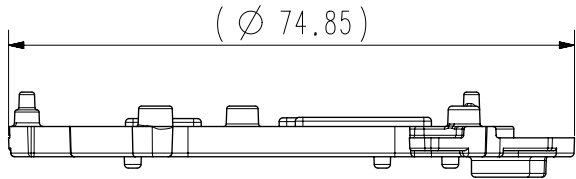
Hanwha Vision

CODE NO.

FC29-018101A

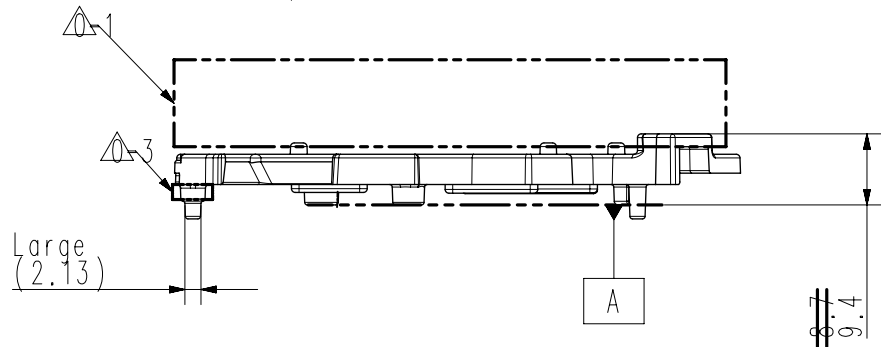
The following Page(s) are related to Diagrams-03. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

NO	PART NAME	CODE NO.	MATERIAL	Q'TY	REMARK
1	HOLDER-PCB-R01_NW_TNM-C28x2TDR	FC29-017757A	Check note	1	-



SECTION A-A

(All bosses are deleted)



Coating Specification

CODE No.	Standard	D20192403178
Color	Code	HVC-MP-3
	Name	Metal Powder White
Printing	Color	Pantone 422C
Process	Casting→Cutting→Sanding→Machining/Tapping→Degrease→Black Anodizing	

NOTE:Die-Casting

1. Material and Basic wall thickness : ADC, t2.0
2. Gate, P/L, Ejector Pin location must be handled with HVC designer.
3. Ejector pin stain must be less than 0.3 depth (㎜), no flash is allowed.
4. Undescribed edge round must be less than R0.5, undescribed corners must be less than R0.3.
5. No Deformation, Air bubble, Shrinkage is allowed.
6. Every flash on P/L must be less than 0.1.
7. Undescribed draft angles must be less than 0.5°.
8. * marks (Key dimensions) must be carefully handled.
9. Surface cutting level of Gate and Over-Flow must be equivalent with other surface cutting level.
10. Part Name, Code Number, Mold Number, Material, Model Name must be carved on the inner side of the part.
 - Location and Specs. must be handled with HVC designer.
11. External look and printing specification must follow separately distributed Design Specification data.
 - Including Surface cutting, Chromate, Sanding, Spray, Silk Print specifications.
12. Reliability must satisfy HVC standards.
13. Delivery packing specifications must be discussed separately.
14. All other issues must be handled with HVC designer.

STANDARD TOLERANCE

DIV	W1 1	W1 2	W1 3	W1 4	W1 5
0-16	±0.05	±0.1	±0.1	±0.2	±0.3
16-63	±0.05	±0.1	±0.2	±0.3	±0.4
63-250	±0.1	±0.2	±0.3	±0.4	±0.4
250-1000	±0.2	±0.3	±0.4	±0.5	±0.6

A2 CHANGE	Δ-1~2 Shape Modification, 2 parts, to separate Heatdissipation Problem (*24.11.08 CHOI.E.S)	Δ-3 Add step to prevent broken.	Δ-4 Raise the Steps(9points for more compression by 0.15 (*24.12.09 CHOI.E.S)	Δ-5 Dimension reglization From 3.2 to 3.4 (*24.12.23 CHOI.E.S)		UNIT	mm	DESIGN	CHECK	APPROVAL	PART NAME	HOLDER-PCB-MAIN
						SCALE	1 / 1	CHOI.E.S	PARK.M.H	CHOI.Y.S	MODEL NAME	TNM-C28x2TRA
						Hanwha Vision					CODE NO.	FC29-017757A

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

NETWORK CAMERA

User Manual

TNM-C2812TDR

TNM-C2822TDR



Network Camera

User Manual

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Trademark

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Restriction

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Disclaimer

Hanuwa Vision makes the best to verify the integrity and correctness of the contents in this document, but no formal guarantee shall be provided. Use of this document and the subsequent results shall be entirely on the user's own responsibility. Hanuwa Vision reserves the right to change the contents of this document without prior notice.

※ Design and specifications are subject to change without prior notice.

※ The initial administrator ID is “admin” and the password should be set when logging in for the first time.

Please change your password every three months to safely protect personal information and to prevent the damage of the information theft.

Please, take note that it's a user's responsibility for the security and any other problems caused by mismanaging a password.

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), 0.23A.
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 TNM-C2812TDR/TNM-C2822TDR products is **-30°C to +55°C (-22°F to +131°F)**.

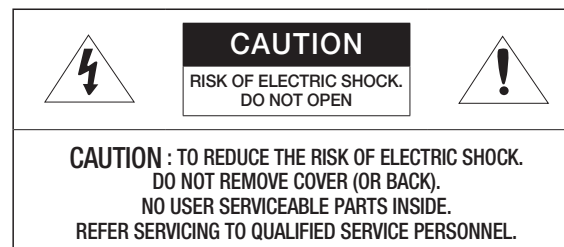
WARNING

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.

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.

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.

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RECOMMENDED PC SPECIFICATIONS

- CPU : Intel(R) Core(TM) i7 3.4 GHz or higher
 - RAM : 8G or higher
 - Recommended browser: Chrome
 - Supported browsers: Chrome, Safari, Firefox, MS Edge(chromium based)
 - Supported OS : Windows, Mac, Linux, Android, iOS, Chrome
 - Verification environment
 - Windows 10: chrome Latest version, Firefox Latest version, MS edge Latest version
 - Mac latest version and version being supported
ref.) <https://en.wikipedia.org/wiki/MacOS>
- ※ The video play performance of the web viewer depends on the performance of the user's CPU and GPU.

RECOMMENDED MICRO SD/SDHC/SDXC MEMORY CARD SPECIFICATIONS

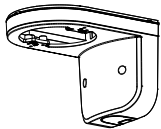
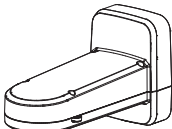
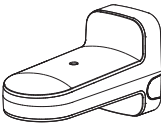
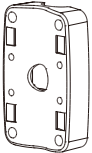
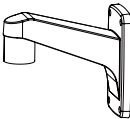
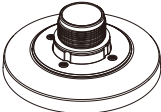
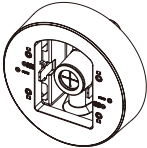
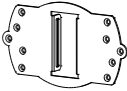
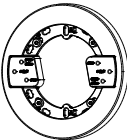
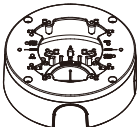
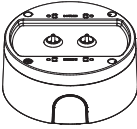
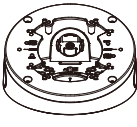
- Recommended capacity : 16 GB ~ 256 GB(MLC type recommended)
- Recommended Manufacturers / Product Type :
 - SanDisk / High Endurance, MAX ENDURANCE
 - Western Digital / Purple QD101
 - Transcend / High Endurance

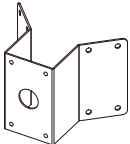
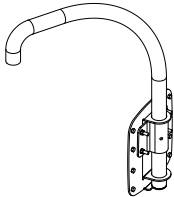
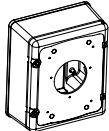
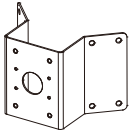
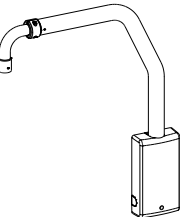
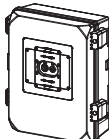
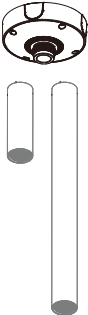
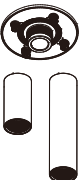
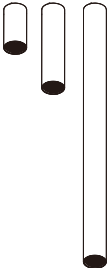
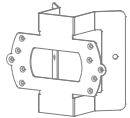
NAS RECOMMENDED SPECS

- Recommended capacity : 200GB or higher is recommended.
- For this camera, you are recommended to use a NAS with the following manufacturer's specs.
Recommended products : QNAP NAS, Synology NAS

OPTIONAL ACCESSORIES FOR INSTALLATION

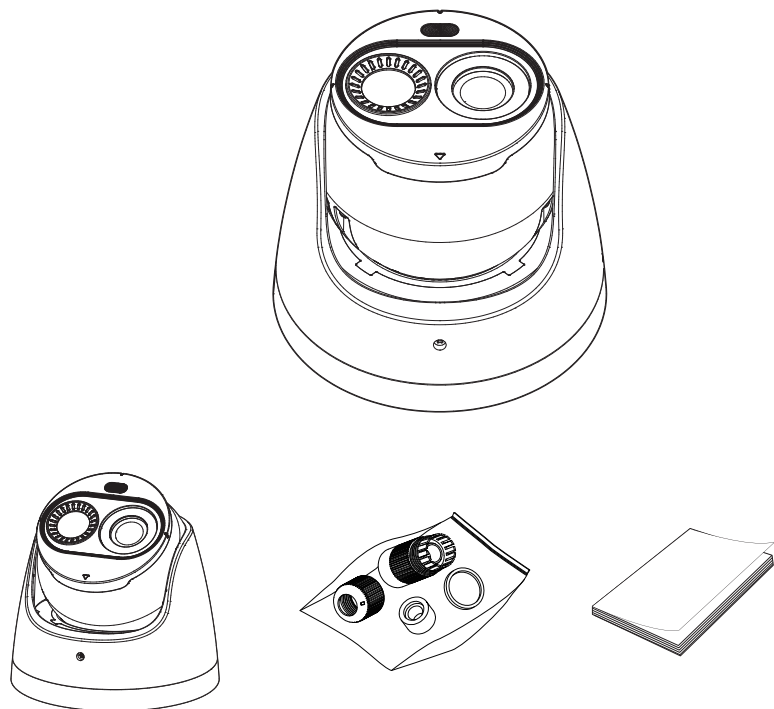
You can purchase appropriate optional accessories available.

Wall Mount and Pole Mount	Hanging Mount	Pole Mount (Direct Assembly)	Gang Plate	Back Box and Tilt Mount
 SBP-125WMW1 (Indoor Wall&Pole Mount)  SBP-400WMW (Wall&Pole Mount) *SBD-110GP1 required for installation  SBP-250WMW (Wall&Pole Mount) *SBD-110GP1 required for installation  SBP-300WMW (Wall Mount) * SBP-300PMW2 required for pole installation  SBP-300PMW2 (Pole Mount)  SBP-300WMW1 (Wall Mount) * SBP-300PMW2 required for pole installation	 SBP-120HMMW	 SBD-140PMW  SBD-140PMB (Light version)	 SBD-110GP1	 SBV-140BW (Back Box)  SBV-140WW (Waterproof Back Box)  SBV-140TMW (Tilt Mount)

Ceiling Mount		Corner Mount	Parapet Mount	Cabinet
Assembly	Individual Parts			
 SBP-300CMTW (Telescopic)	 SBP-180CMB	 SBP-300KMW1	 SBP-300LMW	 SBP-300NBW *Only the QND and QNV products can be installed.
 SBP-300CMTS (Ball Head)	 SBP-180CMS (Ball Head)	 SBP-156KMW	 SBP-156LMW1	 SBP-150NBW
 SBP-300CMW1 SBP-900CMW	 SBP-150CMI SBP-300CMI	 SBP-150CMP SBP-300CMP SBP-900CMP		
	 SBP-140CMB	 SBP-C15P SBP-C15H		
		 SBD-140KMB (Light version) *SBO-090GP is required when installing the QNO product.		

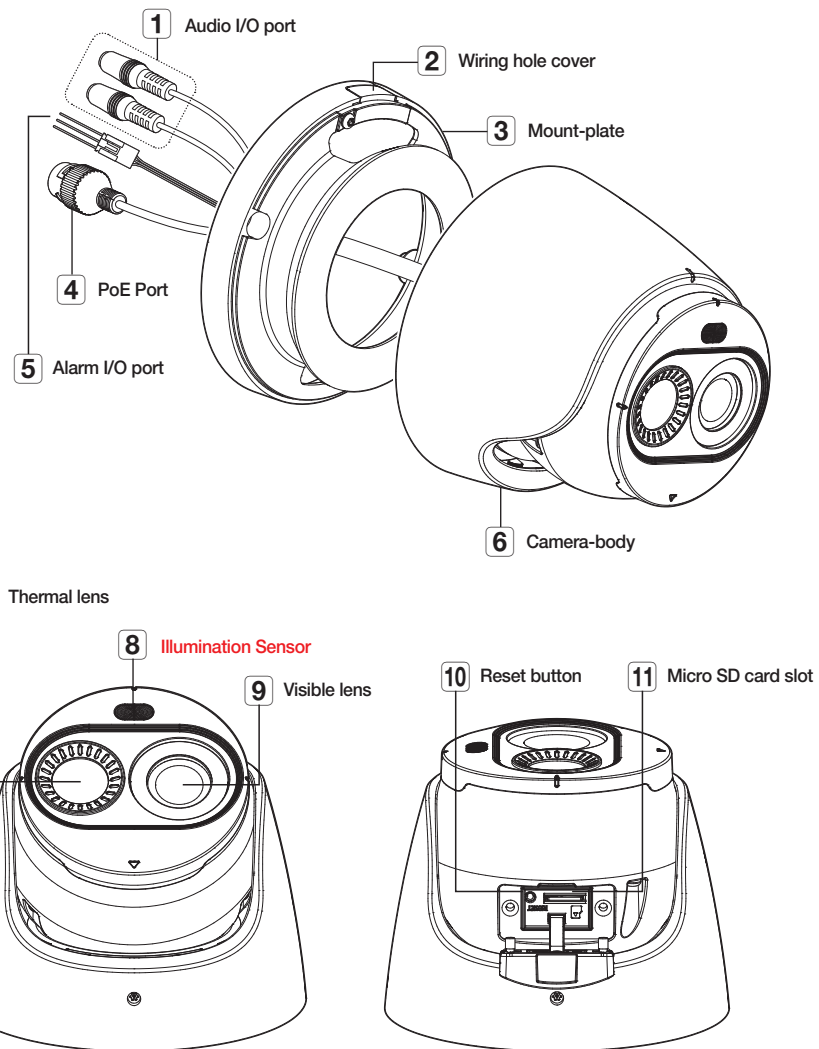
WHAT'S INCLUDED

As for each sales country, accessories are not the same.



■ Use installation screws of at least M4, L30 for the installation of this product.

AT A GLANCE



INSTALLATION



- The camera jack connected to the external cable is not waterproof. You are recommended to install this product below the edge of eaves to prevent the cable from being externally exposed.

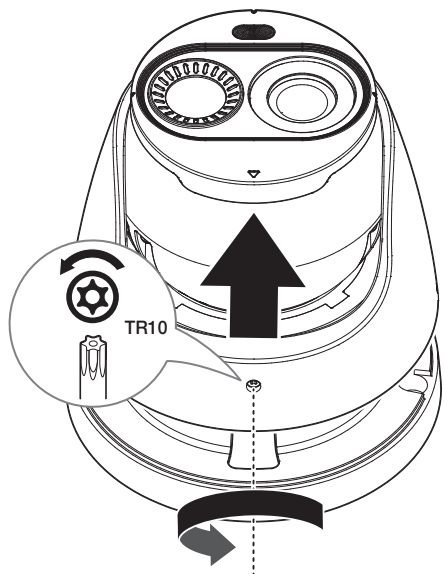
Precautions before installation

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

- Select an installation site that can hold at least 5 times the camera's weight.
- 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.

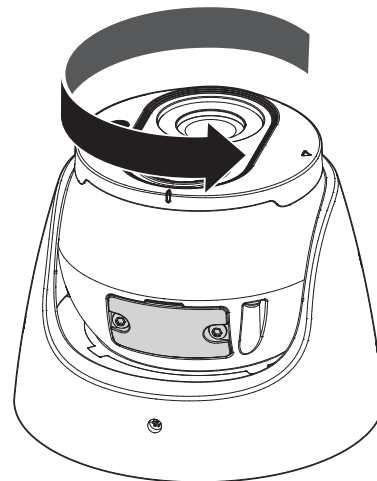
Removal

1. Remove the camera body by turning the mount plate fastening screws counterclockwise.
 - Note that it is not necessary to loosen the screws completely.

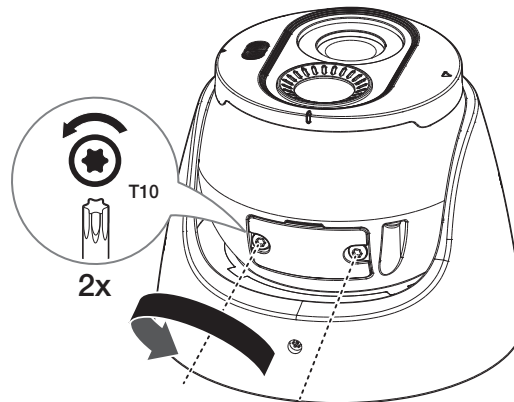


Inserting a Micro SD card

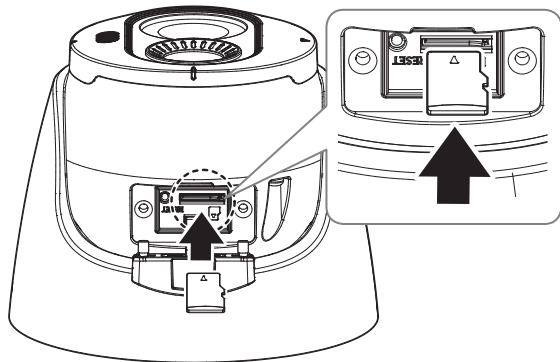
1. 카메라 렌즈를 뒤로 완전히 젖힌 후 그림과 같이 SD 카드 슬롯 커버가 정면으로 오도록 회전시키세요.



2. Torx 렌치 등을 이용하여 Micro SD 카드 슬롯 커버의 나사를 풀은 후 커버를 빼서 아래로 젖혀주세요.



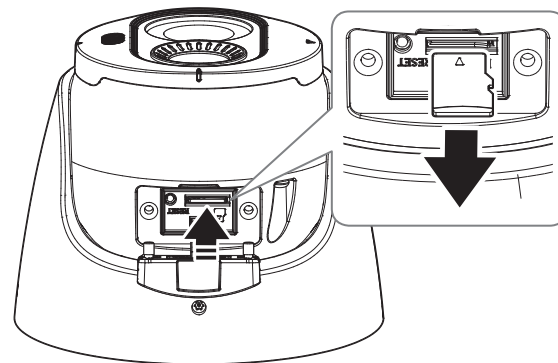
3. After checking the direction of the micro SD card, insert it into the micro SD card slot in the direction of the arrows as shown in the figure.



- Before installing the camera, the Micro SD card should be inserted while the power source and the body are separated.
- Do not forcefully insert it in the reverse direction. It might damage your Micro SD card and your product.
- When it rains or the humidity is high, insertion or ejection of a Micro SD card is not recommended.
- When installing/removing the Micro SD card, make sure you put the product body on a flat ground before working on it in order to prevent accidents due to loss or drop of any parts.
- Disassembly of the product cover should be finished within 5 minutes, or there will be the risk of internal dew condensation.

Removing a Micro SD card

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

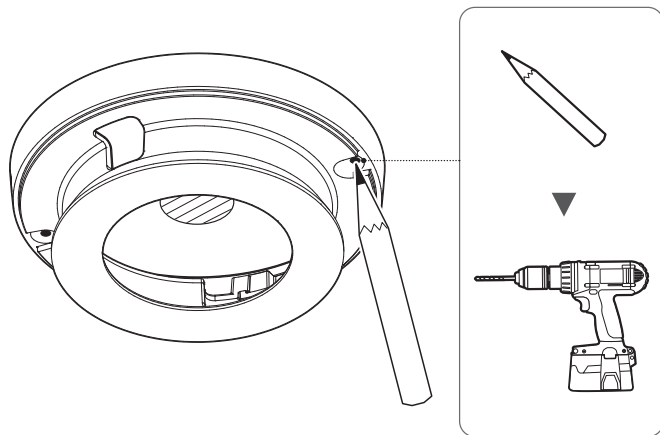


- Before removing the Micro SD card, in <Setup (⚙️)>><Event>><Storage>, set the device to <Off> and press the [Apply] button and turn the camera off.
- If you turn off the camera or remove the Micro SD card that contains data from the product, the data may be lost or damaged.

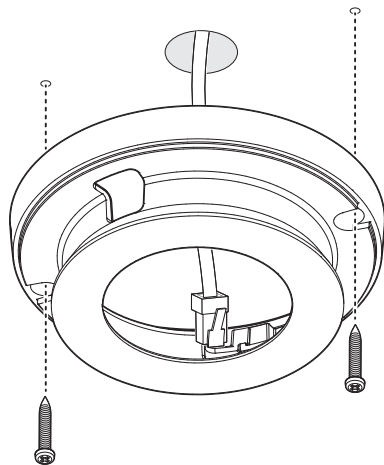
Installation (mount plate)

[Directly installing on wall/ceiling]

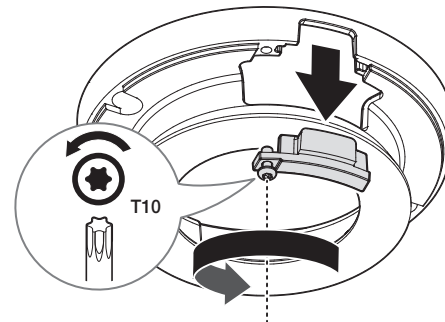
1. Place the mount plate on the desired location considering the direction to be monitored, mark the locations for the screw holes and cable holes, and then drill the holes.



2. Fix the mount plate using appropriate screws.
3. Take out the necessary cables from among the network and audio/alarm cables through the hole of the mount plate.

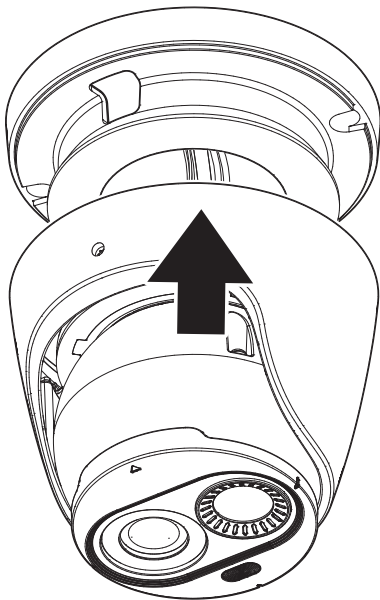


-  ■ When connecting cables from the side, first remove the wiring hole cover of the mount plate.

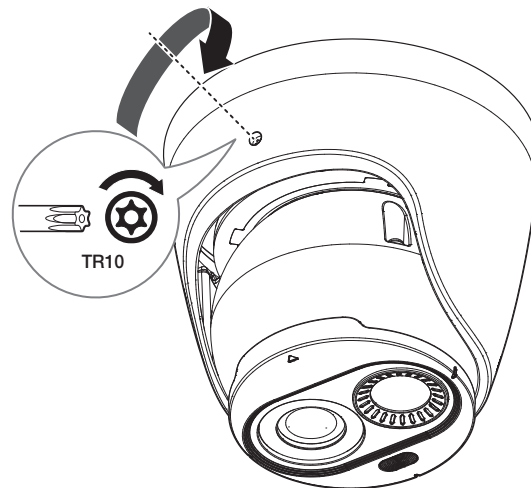


Installation (camera body)

1. 카메라 감시에 필요한 케이블을 각 연결 단자에 모두 연결하세요.



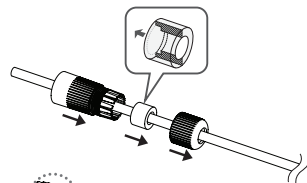
2. Join the camera body with the mount plate.



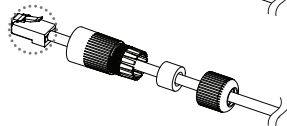
3. Adjust the lens to the desired direction with reference to "Adjusting the monitoring direction for the camera" section. (page 15)

How to connect the RJ45 waterproof cable to a LAN cable

1. Insert it through the arrow direction.

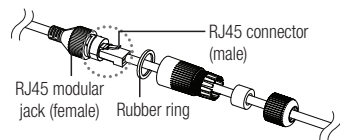


2. Connect the LAN connector (male) to the cable.

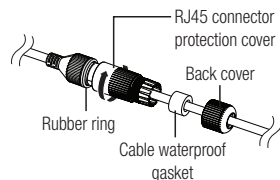


3. Connect the RJ45 modular jack (female) to the RJ45 connector (male).

- Please, keep each of the parts separated.

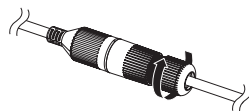


4. Assemble by rotating the RJ45 modular jack (female) and the RJ45 protection cover clockwise (Follow the arrow).



5. Assemble by rotating RJ45 protection cover and back cover clockwise (Follow the arrow).
When the back cover is assembled, the cable waterproof gasket is tightly attached to the cable to make it waterproof.

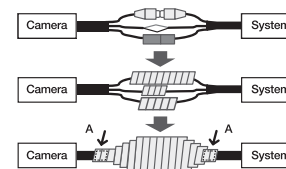
- You must fully assemble it to rotate the back cover up to the end of the screw thread of the RJ45 connector.



Waterproofing of cable connections

When installing the camera, 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.

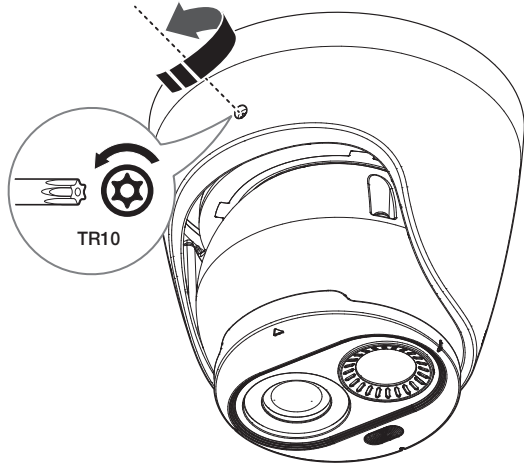
1. Connect network and alarm/audio cables, etc.
2. Wrap the black cable jacket (Area A) and the cable connection area with waterproof (butyl rubber) tape so that more than half of the butyl rubber tape is overlapped.



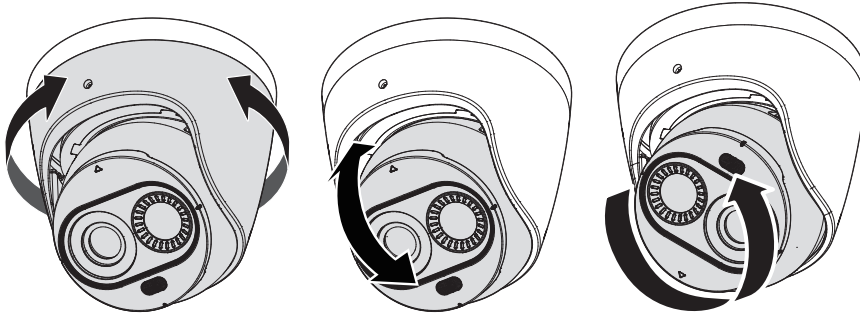
- If the cable jacket is not waterproofed properly, then it can directly cause leakage. Make sure to protect the cable with a dense layer of taping.
- Waterproof butyl tape is made of butyl rubber that can be stretched to twice its normal length.

ADJUSTING THE MONITORING DIRECTION FOR THE CAMERA

1. 마운트 플레이트 체결용 나사를 반시계 방향으로 살짝만 느슨하게 풀어주세요.



2. In consideration of the direction to monitor, adjust Pan, Rotation, and Tilt angles.

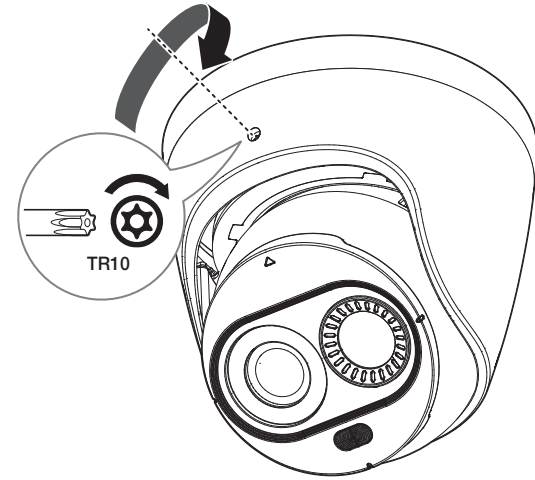


Pan

Tilt

Lens Rotation

3. 카메라의 감시 방향 조정이 완료되면 마운트 플레이트 체결용 나사를 조여주세요.



! When adjusting the camera monitoring direction, loosen the corresponding fixing screws, adjust the camera, and then tighten the screws. Forcibly adjusting the camera while the screws are fastened may cause scratches and malfunction.

Adjusting the monitoring direction

You can adjust the camera direction only when the camera is fixed on the ceiling.

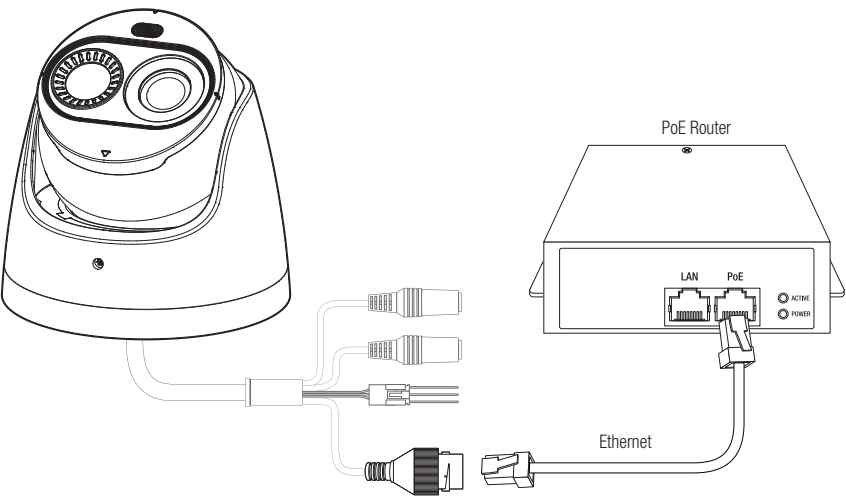
Where, rotating the camera body to the left or right is called Pan, adjusting the tilt is called Tilt, and turning the lens on its axis is called Rotation.

- The pan angle is $0^{\circ} - 355^{\circ}$.
- The tilt angle is $-30^{\circ} - 75^{\circ}$.
- The rotation angle is $0^{\circ} - 355^{\circ}$.

CONNECTING WITH OTHER DEVICE

Powering and networking

Connect the PoE device with the PoE port of the camera.

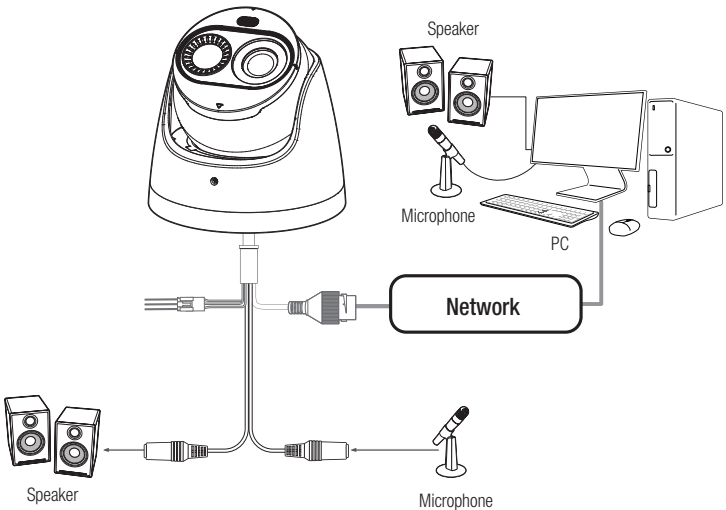


- Connect and use a PoE enabled router.
- Use a PoE device that complies with the IEEE 802.3af standard.
- If you want to connect an external device, you must turn off the external device before proceeding.

Network Cable Specification

Item	Contents	Remark
Connector	RJ-45(10/100BASE-T)	
Ethernet	10/100BASE-T	10/100 Mbps
Cable	Category 5e or higher	
Max Distance	100 m	DC Resistance ≤ 0.125 Ω/m
PoE Support	IEEE 802.3af	

Connecting to Audio Input/Output



1. Connect the MIC port of the camera with the microphone or LINE OUT port of the amplifier that the microphone is connected to.
2. Connect the SPEAKER 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)

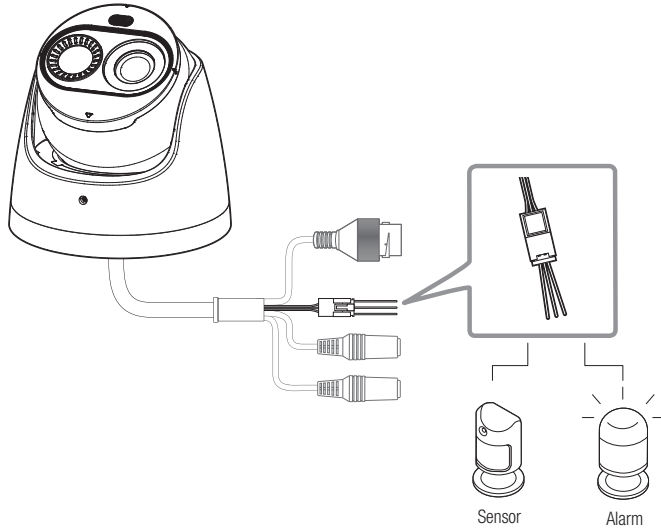
• Full duplex Audio

- **Audio in:** Selectable (microphone/Line-in), Supported voltage: 2.5VDC (4mA), Input impedance: 25kΩ, 3.5mm TRS jack
- **Audio out:** Line-out (3.5mm TRS jack(balanced mono is not supported)), Maximum output: 0.5Vrms, Line out impedance : 600Ω

- In the case you access the web viewer and select an external microphone as the audio input sources in <Video & Audio> - <Audio setup>, the following specifications are recommended:
 - Frequency range: 40-16,000 Hz
 - Impedance: 1,500 Ω
 - Sensitivity: -40±3 dB (7.1-14.1 mV)

Connecting to the I/O port box

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



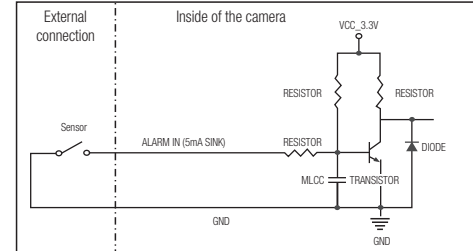
- ALARM-IN : Used to connect the alarm input sensor or external day/night sensor.
- ALARM-OUT : Used to connect the alarm output signal.
- GND : Common port for alarm in/output signal.

- ❗ 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.
- SIGNAL LINE - BLACK : GND / ORANGE : ALARM IN / BROWN : ALARM OUT

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.

Alarm In Wiring Diagram

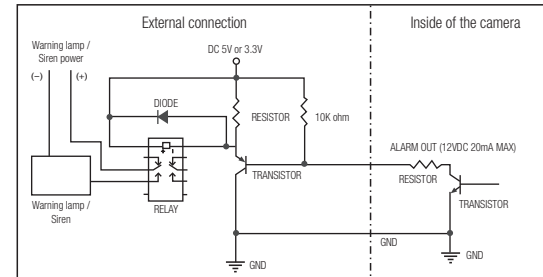


To connect the alarm out

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



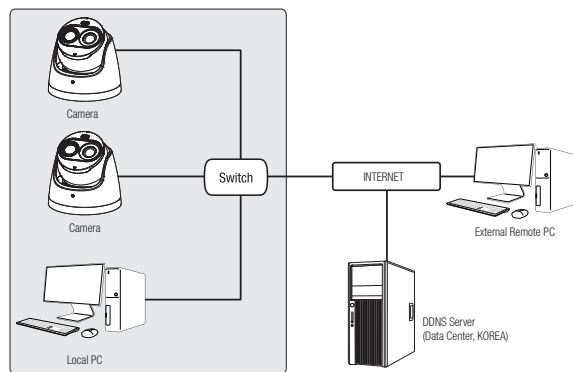
network connection and setup

You can set up the network settings according to your network configurations.

CONNECTING THE CAMERA DIRECTLY TO LOCAL AREA NETWORKING

Connecting to the camera from a local PC in the LAN

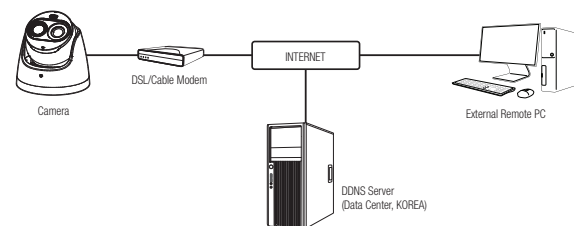
1. Launch an Internet browser on the local PC.
2. Enter the IP address of the camera in the address bar of the browser.



<Local Network>

- A remote PC in an external Internet out of the LAN network may not be able to connect to the camera installed in the intranet if the port-forwarding is not properly set or a firewall is set. In this case, to resolve the problem, contact your network administrator.
- By factory default, the IP address will be assigned from the DHCP server automatically. If there is no DHCP server available, the IP address will be set to 192.168.1.100. To change the IP address, use the Device Manager. For further details on Device Manager use, refer to "Using Device Manager". (Page 19)

CONNECTING THE CAMERA DIRECTLY TO A DHCP BASED DSL/CABLE MODEM



1. Connect the user PC directly with the network camera.
2. Run the Device Manager and change the IP address of the camera so that you can use the web browser on your desktop to connect to the camera.
3. Use the Internet browser to connect to the web viewer.
4. Move to [Setup] page.
5. Move to [Network] – [DDNS] and configure the DDNS settings.
6. Move to [Basic] – [IP & Port], and set the IP type to [DHCP].
7. Connect the camera, which was removed from your PC, directly to the modem.
8. Restart the camera.

- For information on how to set DDNS, refer to the online help of Web Viewer.
- For information on how to set the IP format, refer to the online help of Web Viewer.

USING DEVICE MANAGER



- Device manager program can be downloaded from <Support>-<Online Tool> menu at Hanwha Vision website (<https://www.HanwhaVision.com>).
- More instructions of Device Manager can be found at <Help> menu of the main page.

AUTOMATICALLY SEARCHING CAMERA

If a camera is connected to the same network of the PC where device manager is installed, you can find network camera by using search function.

1. Click <Search> at the main page of device manager.
2. Check the camera from the list.
 - Check MAC address at the sticker attached to the camera.

CONFIGURING IP ADDRESS

If you want to change camera network setting, <Login OK> sign must be displayed at <Status>. Click <Authentication> at the main page to log in.

Configuring Static IP

Manually insert and configure IP address & port information.

1. Click the camera from the list that you want the change the IP setting.
2. Click <IP Assign> at the main page of device manager.
3. Select <Assign the following IP address>.
 - IP information of the camera will be displayed as previously set.
4. Fill in IP & Port related categories.

If not using a Broadband Router

For setting <IP Address>, <Subnet Mask>, and <Gateway>, contact your network administrator.

- HTTP Port : Used to access the camera using the Internet browser, defaulted to 80.
- RTSP Port : A port that controls real-time streaming. The initial value is 554.

If using a Broadband Router

- IP Address : Enter an address falling in the IP range provided by the Broadband Router.
ex) 192.168.1.2~254, 192.168.0.2~254, 192.168.XXX.2~254
- Subnet Mask : The <Subnet Mask> of the Broadband Router will be the <Subnet Mask> of the camera.
- Gateway : The <Local IP Address> of the Broadband Router will be the <Gateway> of the camera.



- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.
- For more information about port forwarding of the broadband router, refer to "Port Range Forward (Port Mapping) Setup". (Page 21)

If the Broadband Router has more than one camera connected

Configure the IP related settings and the Port related settings distinctly with each other.

ex)

	Category	Camera #1	Camera #2
IP related settings	IP Address	192.168.1.100	192.168.1.101
	Subnet Mask	255.255.255.0	255.255.255.0
	Gateway	192.168.1.1	192.168.1.1
Port related settings	HTTP Port	8080	8081
	RTSP Port	554	555



- If the <HTTP Port> is set other than 80, you must provide the <Port> number in the address bar of the Internet browser before you can access the camera.
ex) http://IP address : HTTP Port
http://192.168.1.100:8080

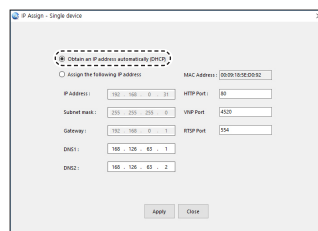
5. Click [Apply] Button.
6. If the success message is displayed, click [OK].

Configuring Dynamic IP

Receive IP address from DHCP

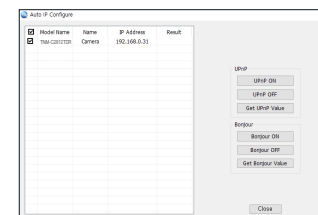
- Example of the Dynamic IP environment
 - If a Broadband Router, with cameras connected, is assigned an IP address by the DHCP server
 - If connecting the camera directly to modem using the DHCP protocols
 - If IPs are assigned by the internal DHCP server via the LAN

1. Click the camera from the list that you want to change the IP setting.
2. Click **<IP Assign>** at the main page of device manager.
3. Select **<Obtain an IP address automatically (DHCP)>**.
4. Click **[Apply]** button.
5. If the success message is displayed, click **[OK]**.



AUTOMATICALLY CONFIGURING IP

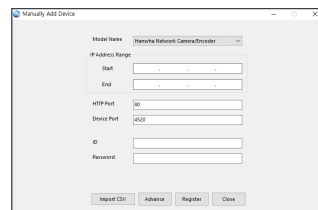
1. Click the camera from the list that you want to automatically configure the IP.
2. Click **< + >** at the main page of device manager.
 - Equipment Setting menu appears.
3. At the menu, click **<Auto IP Configure>**.
4. Click **[Close]** button.



MANUALLY REGISTERING CAMERA

If the camera cannot be found using search function, the camera can be registered remotely by manually inserting IP information, if the camera is connected to external network.

1. Click **<Add Devices>** - **<Manually Add Device>** at the main page of device manager.
2. Insert the range of IP address that you search.
3. Select the **<Model Name>** of the camera that you register, and insert HTTP port, ID, and password.
4. Click **[Register]** button.
5. Check if camera is registered.
 - Check MAC address at the sticker attached to the camera.

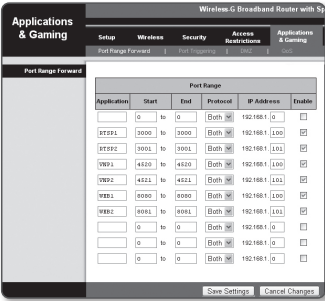


PORT RANGE FORWARD (PORT MAPPING) SETUP

If you have installed a Broadband Router with a camera connected, you must set the port range forwarding on the Broadband Router so that a remote PC can access the camera in it.

Manual Port Range Forwarding

1. From the Setup menu of the Broadband Router, select <Applications & Gaming> - <Port Range Forward>. For setting the port range forward for a third-party Broadband Router, refer to the user guide of that Broadband Router.
2. Select <TCP> and <UDP Port> for each connected camera to the Broadband Router.
The number of each port to be configured to the IP router should be set according to the port number designated in <Setup> - <Basic> - <IP & Port> on the camera web viewer.
3. When done, click [Save Settings].
Your settings will be saved.

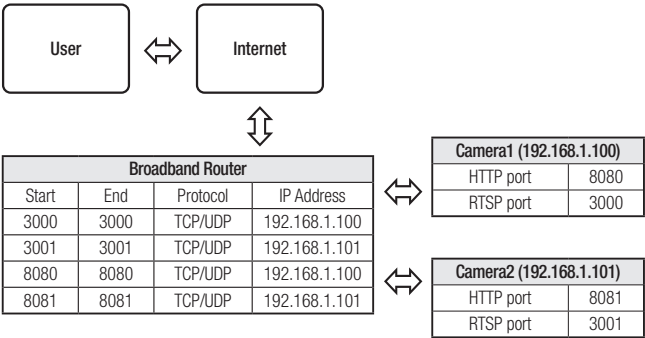


- Port forwarding setting is an example of setting CISCO IP router.
- The settings may differ depending on the connected Broadband Router model. For more information, refer to the user manual of the applicable router.

Setting up Port Range Forward for several network cameras

- You can set a rule of Port Forwarding on the Broadband Router device through its configuration web page.
- A user can change each port using the camera setting screen.

When Camera1 and Camera2 are connected to a router :



- Port forwarding can be done without additional router setup if the router supports the UPnP (Universal Plug and Play) function. After connecting the network camera, select the checkbox from the menu <Quick connect> in <DDNS> in "Settings -> Network -> DDNS".

CONNECTING TO THE CAMERA FROM A SHARED LOCAL PC

1. Run device manager.
It will scan for connected cameras and display them as a list.
2. Double-click a camera to access.
The Internet browser starts and connects to the camera.



- Access to the camera can also be gained by typing the camera's IP address in the address bar of the Internet browser.

CONNECTING TO THE CAMERA FROM A REMOTE PC VIA THE INTERNET

On a remote computer that is not in the Broadband Router's network cluster is not allowed, users can access cameras within a Broadband Router's network by using the camera's DDNS URL.

1. Before you can access a camera in the Broadband Router network, you should have set the port range forward for the Broadband Router.
2. From the remote PC, launch the Internet browser and type the DDNS URL address of the camera, or the IP address of the Broadband Router in the address bar.
ex) <http://ddns.hanwha-security.com/ID>

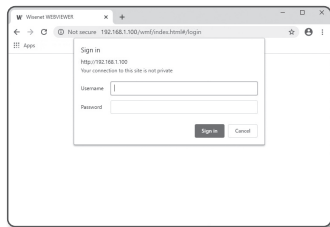


- To use DDNS, sign up at the DDNS homepage (<http://ddns.hanwha-security.com>) and register the product at **[My DDNS]>[Register Product]**.

CONNECTING TO THE CAMERA

Normally, you would

1. Launch the Internet browser.
2. Type the IP address of the camera in the address bar.
ex) • IP address (IPv4) : 192.168.1.100 →
http://192.168.1.100
- the Login dialog should appear.
• IP address (IPv6) : 2001:230:abcd:ffff:0000:0000:ffff:1111
→ http://[2001:230:abcd:ffff:0000:0000:ffff:1111] - the Login dialog should appear.



If the HTTP port is other than 80

1. Launch the Internet browser.

Type the IP address and HTTP port number of the camera in the address bar.

- ex) IP address : 192.168.1.100:HTTP Port number(8080)
→ http://192.168.1.100:8080 - the Login dialog should appear.

Using URL

1. Launch the Internet browser.
2. Type the DDNS URL of the camera in the address bar.
ex) URL address : http://ddns.hanwha-security.com/ID
- the Login dialog should appear.



- Network connection is disabled in the LAN only environment.

Connecting via UPnP

1. Run the client or operating system in support of the UPnP protocol.
2. Click the camera name for search.
In the Windows operating system, click the camera name searched from the network menu.
- The login window is displayed.

Connecting via Bonjour

1. Run the client or operating system in support of the Bonjour protocol.
2. Click the camera name for search.
In the Mac operating system, click the camera name searched from the Bonjour tab of Safari.
- The login window is displayed.

To check the DDNS address

If the camera is connected directly to a DHCP-based cable modem or DSL modem, the IP address will change each time it tries to connect to the ISP (the company you subscribed to).
If this is the case, you will not be informed of the IP address changed by DDNS.

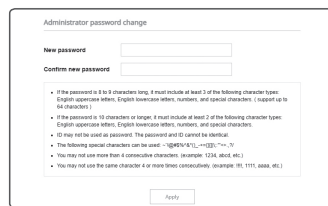
Once you register a dynamic IP-based device with the DDNS server, you can easily check the changed IP when you try to access the device.

To register your device to the <DDNS> server, visit <http://ddns.hanwha-security.com> and register your device first, and then set the Web Viewer's <Network> - <DDNS> to <DDNS>, as well as providing <Product ID> that had been used for DDNS registration.

PASSWORD SETTING

When you access the product for the first time, you must register the login password.

- For a new password with 8 to 9 characters, you must use at least 3 of the following: uppercase/lowercase letters, numbers and special characters. For a password with 10 characters or longer, you must use at least 2 types of those mentioned. (support up to 64 characters)
 - Special characters that are allowed. :
~!@#\$%^&*()_~+={}[]\|;:'" < > . , ? /
- Space is not allowed for password.
- For higher security, you are not recommended to repeat the same characters or consecutive keyboard inputs for your passwords.
- If you lost your password, you can press the **[RESET]** button to initialize the product. So, don't lose your password by using a memo pad or memorizing it.



Administrator password change

New password

Confirm new password

• If the password is 8 to 9 characters long, it must include at least 3 of the following character types: English uppercase letters, English lowercase letters, numbers, and special characters. (support up to 64 characters)
 • If the password is 10 characters or longer, it must include at least 2 of the following character types: English uppercase letters, English lowercase letters, numbers, and special characters.
 • ID may not be used as password. The password and ID cannot be identical.
 • The following special characters can be used: ~!@#\$%^&*()_~+={}[]\|;:'" < > . , ? /
 • You may not use the same character 4 or more times consecutively. (example: 1234, abcd, etc.)

LOGIN

Whenever you access the camera, the login window appears. Enter the User ID and password to access the camera.

1. Enter "admin" in the <User name> input box.
The administrator's ID, "admin," can be changed in the Web Viewer.
2. Enter the password in the <Password> input field.
3. Click **[Sign in]**.
If you have logged in successfully, you will the Live Viewer screen.



Sign in

http://192.168.1.100

Your connection to this site is not private

Username

Password

- When you access the camera web viewer, pay special attention to the security by checking whether the image data is encrypted.
- You will experience the best video quality if the screen size is 100%. Reducing the ratio may cut the image on the borders.

CAMERA WEB VIEWER SETUP

1. Click the **[Setup (⚙️)]** icon.
2. The Settings window appears.
3. You can configure settings for the camera's basic information, video, audio, network, event, analysis, and system over the network.
4. Click **<Help (🔍)>** to view detailed descriptions of each function.

TROUBLESHOOTING

PROBLEM	SOLUTION
When an Windows 10 user accesses the web viewer through Chrome or Firefox, the sound volume of microphone changes periodically.	This is what happens when microphone driver has been set to Realtek driver. Install the High Definition Audio device (Windows Default Driver) or the third party driver as the microphone driver.
What are the specifications for WAVE files necessary to play audio at the time of an event?	- Sampling rate of 48,000 KHz or less is recommended. - For bits per sample (bps), up to 8/16 bit is recommended. - Only PCM encoding format is supported.
No video is displayed when accessing the plug-in free webviewer on Safari via HTTPS.	- On the authentication popup window prompted when initially accessing https, click "View Authentication Certificate" and select the "Always trust when connecting to the designated webviewer IP" check box. - If the webviewer continues failing to display a video after you select "Next" on the message window below, press the command key + Q to exit the Safari browser, access again and follow the procedures stated above.
I can't access the camera from a web browser.	- Check to make sure that the camera's Network settings are appropriate. - Check to make sure that all network cables have been connected properly. - If connected using DHCP, verify that the camera is able to acquire dynamic IP addresses without any problem. - If the camera is connected to a Broadband Router, verify that port forwarding is properly configured.
Viewer got disconnected during monitoring.	- Connected Viewers become disconnected upon any change to camera or network configurations. - Check all network connections.
The camera connected to the network is not detected in the Device Manager program.	Turn off the firewall settings on your PC and then search the camera again.
Images overlap.	Check whether two or more cameras are set to a single multicast address instead of different addresses. If a single address is used for multiple cameras, the images may overlap.
No image appears.	If the transmission method is set to multicast, check whether there is a router that supports multicast in the LAN the camera is connected to.

PROBLEM	SOLUTION
Voice is not recorded even though audio input settings are configured.	You must enable the <Audio In> check box in <Basic> - <Video Profile>.
<Motion detection> of <Analytics> is set to <Enable>, but no notification e-mail reaches me even when an analysis event had occurred.	- Verify the settings in the following sequence: - Check <Data & Time> settings. - The <Motion detection> should be set to <Enable>. - Check if the <E-mail> option of <Event setup> menu is checked to use.
No signal is found at the Alarm Output port even when an intelligent video analysis event is generated.	Check alarm output port settings.
Cannot record into the Micro SD card.	- Check if the memory card is defective. - When replacing the Micro SD card, it must be done while the power is disconnected from the product.
Micro SD card is inserted but the camera does not operate properly.	- Check if the Micro SD card is inserted in the proper direction. Operation of Micro SD card that is formatted by other devices is not guaranteed with this camera unit. - Format the Micro SD card again in <Setup> → <Event> → <Storage> menu.
Cannot record in the NAS.	Confirm that the information registered in the NAS is correct.
It reports that NAS setting has failed.	- Confirm that the IP address of the NAS is valid. - Confirm that the ID/password of the NAS is valid. - Confirm that you can access the folder designated as the default folder using the ID of the NAS. - Confirm that the NAS SMB/CIFS items are unchecked. - Confirm that the NAS IP address and the camera IP address are in the same format. ex) The NAS & camera subnet mask initial value is 255.255.255.0. If the IP address is 192.168.20.32 then the NAS IP address should be in the range of 192.168.20.1~192.168.20.255. - Check whether you tried to access as another user without formatting the default folder saved or used. - Confirm that you used recommended NAS equipment.



Any changes or modifications in construction of this device which are not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.



Hanwha Vision cares for the environment at all product manufacturing stages, and is taking measures to provide customers with more environmentally friendly products. The Eco mark represents Hanwha Vision's devotion to creating environmentally friendly products, and indicates that the product satisfies the EU RoHS Directive.



Correct Disposal of This Product (Waste Electrical & Electronic Equipment)

(Applicable in the European Union and other European countries with separate collection systems)

This marking on the product, accessories or literature indicates that the product and its electronic accessories (e.g. charger, headset, USB cable) should not be disposed of with other household waste at the end of their working life. To prevent possible harm to the environment or human health from uncontrolled waste disposal, please separate these items from other types of waste and recycle them responsibly to promote the sustainable reuse of material resources.

Household users should contact either the retailer where they purchased this product, or their local government office, for details of where and how they can take these items for environmentally safe recycling.

Business users should contact their supplier and check the terms and conditions of the purchase contract. This product and its electronic accessories should not be mixed with other commercial wastes for disposal.



Correct disposal of batteries in this product

(Applicable in the European Union and other European countries with separate battery return systems.)

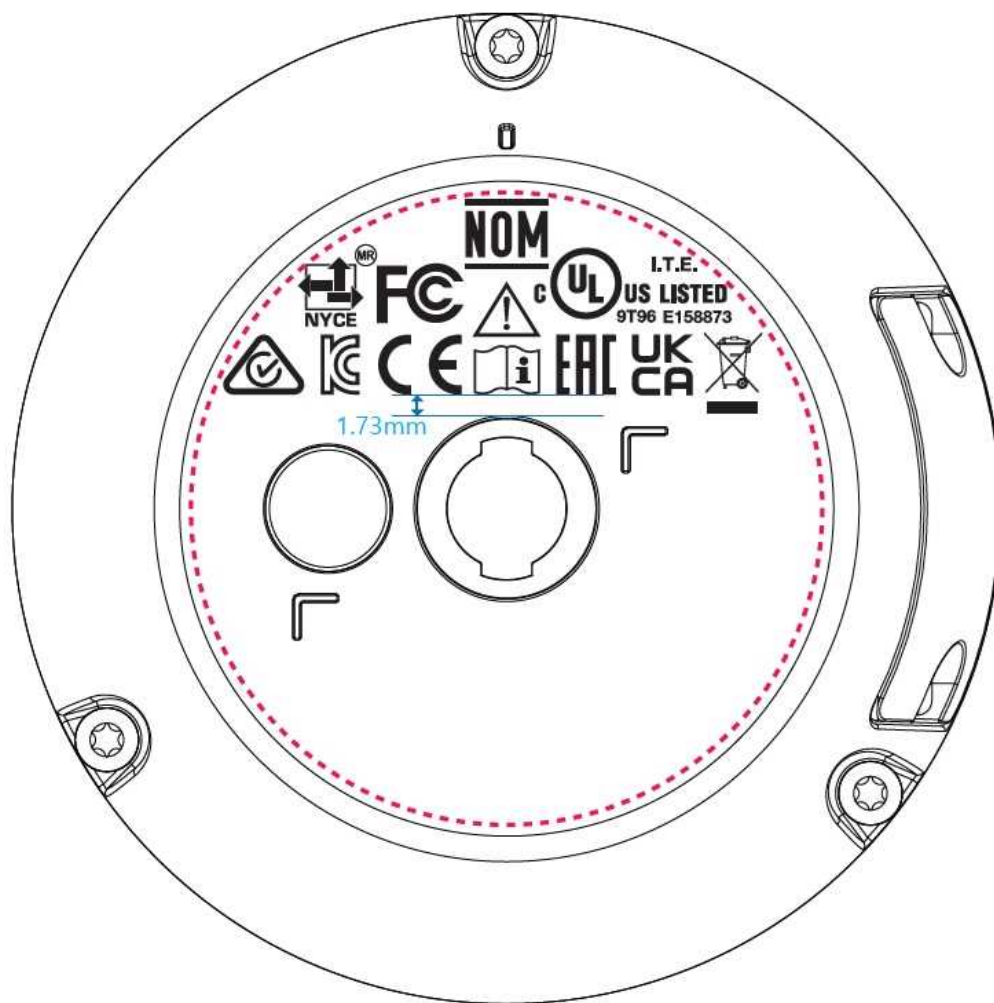
This marking on the battery, manual or packaging indicates that the batteries in this product should not be disposed of with other household waste at the end of their working life. Where marked, the chemical symbols Hg, Cd or Pb indicate that the battery contains mercury, cadmium or lead above the reference levels in EC Directive 2006/66. If batteries are not properly disposed of, these substances can cause harm to human health or the environment.

To protect natural resources and to promote material reuse, please separate batteries from other types of waste and recycle them through your local, free battery return system.



NETWORK THERMAL CAMERA, TNM-C2822TDR
PoE(48V ) 0.23A
M/C: TNM-C2822TDR/KEX Fac. ID:D

DATE S/N: Serial No.
MAC ADDRESS: XX-XX-XX-XX-XX-XX
CAN ICES-3(A)/NMB-3(A)
HANWHA VISION CO., LTD. Rainproof / Étanche
MADE IN KOREA IP67



The following Page(s) are related to Miscellaneous-04. The next supplement, if applicable, will be identified with a new Supplement Page Heading.



SPECIFICATION FOR APPROVAL

客户名称 CUSTOMER			
客户料号 MODEL NO			
产品名称 PART NAME	POWER TRANSFORMER		
产品型号 PART TYPE	PDT25239SR		
版 本 REV	X1		
签 名 SIGNATURE	制作: PREPARED BY 	审核: CHECKED BY 	批准: APPROVED BY 
客户承认 CUSTOMER APPROVAL	承认印: SIGNET 签 名: SIGNATURE		

深圳市联泰兴电子科技有限公司

SHENZHEN GROUP-TEK ELECTRONICS TECHNOLOGY CO., LTD

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Http://www.group-tek.com

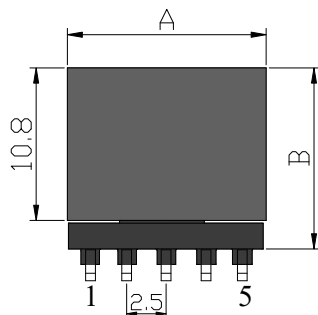
E-mail:sale1@group-tek.com

1. Revision History:

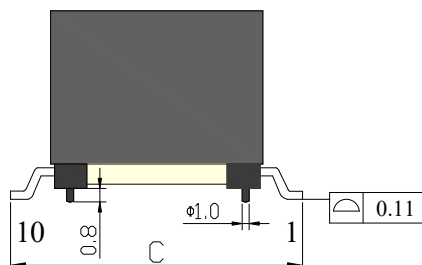
[illegible]

2. EXTERNAL DIMENSIONS: UNIT: mm

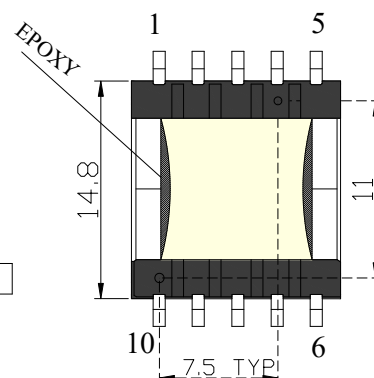
FRONT VIEW



TOP VIEW



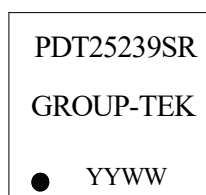
SIDE VIEW



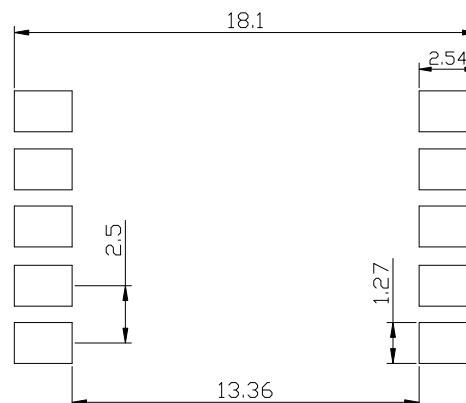
Unit: mm Tolerances:

A	B	C
Max	Max	Max
15.0	14.0	17.8

Marking information



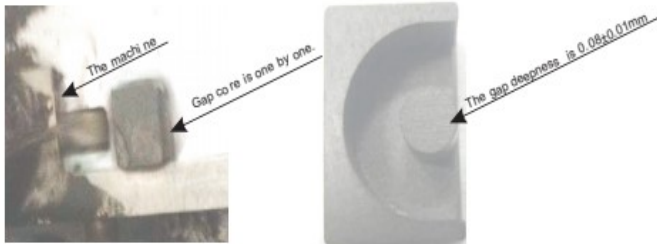
Suggested PCB Pad Layout



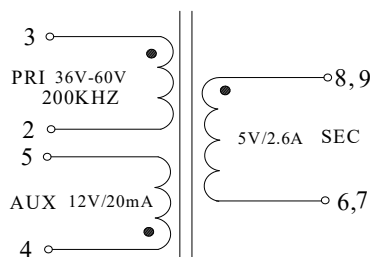
3. Electrical Characteristics :

Specifications: at 25 degree C. Operating Temperature -40 to +125°C			
NO	ITEM	TEST CONDITION	SPECIFICATION
1	Inductance	(3-2) @25°C 100KHZ/1V	77uH ± 15%
		(4-5) @25°C 100KHZ/1V	29uH ± 20%
		(8,9-6,7) @25°C 100KHZ/1V	5.7uH ± 20%
2	Leakage Inductance	(3-2) @25°C 200KHZ/0.1V shorted other pins	1.0uH MAX
3	DCR	(3-2) @25°C	180mΩ MAX.
4		(8,9-6,7) @25°C	15mΩ MAX.
5		(4-5) @25°C	280mΩ MAX.
7	URNS RATIO	PRI (3-2) : SEC (8,9-6,7) : AUX (4-5)	22: 6: 13 ± 2%
8	HI-POT:	PRI TO SEC	1500V/AC/1mA 2Sec

4. Overhauling List

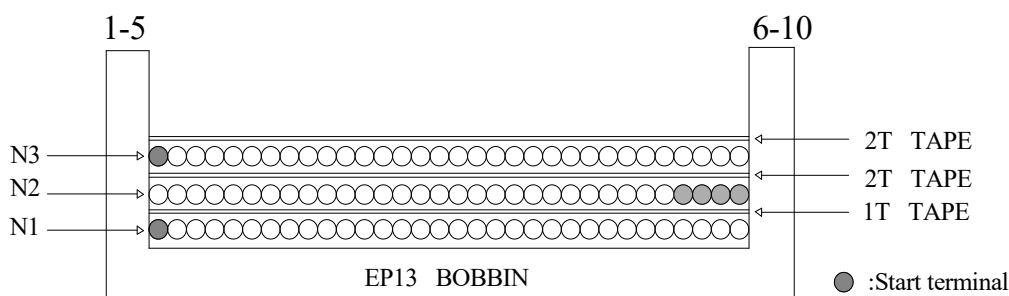
NO	ITEM	SPECIFICATION
1	Tape turns	2T
2	Margin tape thickness	0.10mm
3	Winding turns	N1:22T N2:6T N3:13T
4	Pins order/ Pin connection	1T
5	Marking Information	Marking information PDT25239SR GROUP-TEK ● YYWW
6	Gap the center leg	
7	Solder Temperature	

5. Schematic:



NOTE: PIN8, 9&6, 7 must shorted on PCB

6. winding detail:



7. Winding Information:

WINDING SEQ.	ST-FN	WIRE/FOIL	TURNS	WRAP INSUL.	MARGIN TAPE	SLEEVE	NOTE
1	3--2	0.28mm2UEW	22TS	1T w8.0mm	N/A	N/A	1,2
2	8--6	4*0.3mm2UEW	6TS	2T w8.0mm	N/A	N/A	1,2
3	9--7						
4	4--5	0.28mm 2UEW	13TS	2T w8.0mm	N/A	N/A	1,2

NOTE :

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

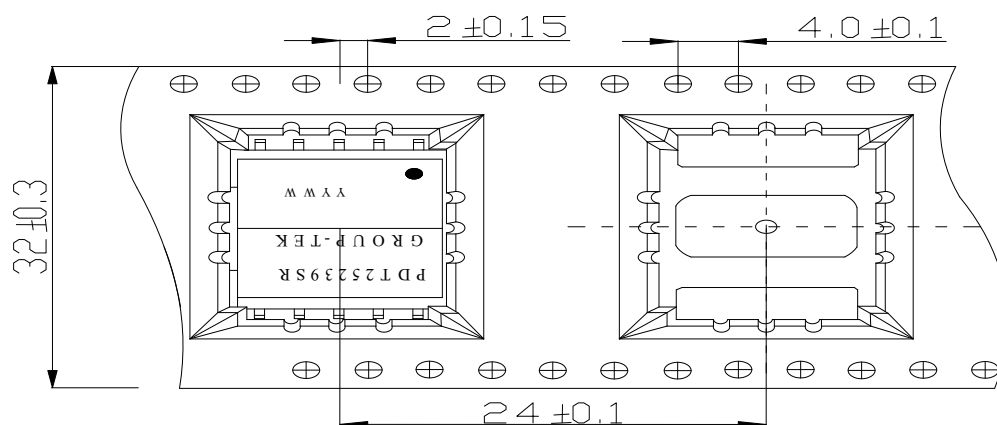
2.Clockwise and spaced winding

8. Material List:

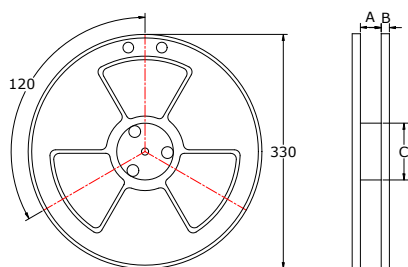
NO	ITEM	MATERIALS	SUPPLIERS/MANUFACTURERS	UL FILE NO.
1	BOBBIN	PHENOLIC T375J UL RATING: 94V-0	Chang Chun Plastics Co.,Ltd	E59481
2	CORE	E P13 TP44/PG242	High-tech Electronics Co.,Ltd /FENGHU	N/A
3	WIRE	POLYURETHANE ENAMELED TYPE NO: 2UEW THERMAL RATING:180°	Shing Shun Magnet wire(HuiZhou) Co.,Ltd	E255839
4	TAPE	ADHESIVE POLYESTER TAPE 1350FY-1(b)	Dongguan Jintai pro puced Co.,Ltd	E17385
5	SOLDER	SN/CU: 99.3/0.7	Gao Xin stannum industry Co.,Ltd	N/A
6	Glue	E-500(XX)	Dong Guan city eatto electronic material Co.,Ltd	E218090
7	INK	VIC-120	Shenzhenhuarui samwo group co.,Ltd	N/A

9. DIMENSION FOR CARRIER TAPE & REEL.

(UNIT 单位: mm)



Packaging -Cover tape



SPEC	8	12	16	24	32	44	56	72
DIM A ± 0.1	8.5	12.5	16.5	24.5	32.5	44.5	56.5	72.5
DIM B ± 0.1	2.3	2.3	2.3	2.3	2.3	2.3	2.3	2.3
DIM C ± 0.1	100	100	100	100	100	100	100	100

PACKING QUANTITY:

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

Note:

- 1: All temperatures refer to the center of the package, measured on the package body surface that is facing up during assembly reflow (e.g., live-bug). If parts are reflowed in other than the normal live-bug assembly reflow orientation (i.e., dead-bug), T_p shall be within $\pm 2^\circ\text{C}$ of the live-bug T_p and still to accurately measure actual peak package body temperatures refer to JEP140 for recommended thermocouple use. meet the T_c requirements, otherwise, the profile shall be adjusted to achieve the latter.
- 2: Reflow profiles in this document are for classification/preconditioning and are not meant to specify board assembly profiles. Actual board assembly profiles should be developed based on specific process needs and board designs and should not exceed the parameters in Table 5-2. For example, if T_c is 260°C and time t_p is 30 seconds, this means the following for the supplier and the user. For a supplier: The peak temperature must be at least 260°C . The time above 255°C must be at least 30 seconds. For a user: The peak temperature must not exceed 260°C . The time above 255°C must not exceed 30 seconds.
- 3: All components in the test load shall meet the classification profile requirements.
- 4: SMD packages classified to a given moisture sensitivity level by using Procedures or Criteria defined within any previous version of J-STD-020, JESD22-A112 (rescinded), IPC-SM-786 (rescinded) do not need to be reclassified to the current revision unless a change in classification level or a higher peak classification temperature is desired.

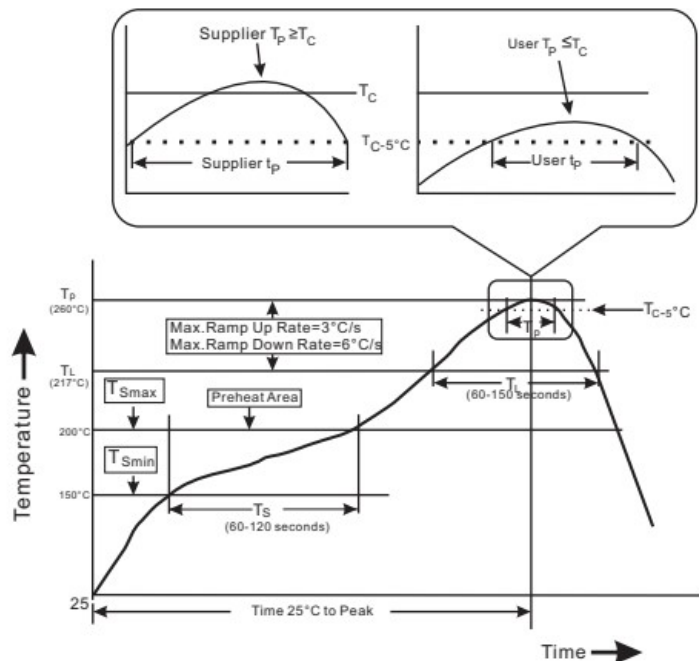
2. Reliability Test Criteria.

- 2.1 Operating temperature range: $-40 \sim 125^\circ\text{C}$
- 2.2 Terminal strength: Pull test withstand $9.8\text{N } 60 \pm 0.5\text{S}$ no looseness or movement.
- 2.3 Solderability: Dipped in $245^\circ\text{C} \pm 5^\circ\text{C}$ molten solder for 3 ± 0.5 seconds, 95% min shall be smooth any and bright
- 2.4 Resistance to soldering heat: Convection reflow condition setting: peak temperature at $260^\circ\text{C} \pm 5^\circ\text{C}$ above 217°C for 60-150 seconds, ramp-up rate $2-3^\circ\text{C/s}$. Ramp-down rate 6°C/s Max. No mechanical problem found. No electrical failure found per our specification.
- 2.5 Vibration: 1.5mm amplitude total excursion 10-55-10 Hz traversed in 1 minute, x.y.z, axis for 2 hours. Shall not be any abnormality.
- 2.6 Random drop (Packing condition): Height 60cm, 3 times on the wood floorboard, shall not be any abnormality.
- 2.7 Damp Heat: $60 \pm 2^\circ\text{C}$, $93 \pm 3\%$ RH 96 hours.
- 2.8 Change of temperature: exposed 5 cycle; each consisting of 30 minutes at $-20 \pm 2^\circ\text{C}$, 2-3 minutes at $20 \pm 2^\circ\text{C}$, 30 minutes at $85 \pm 2^\circ\text{C}$, 2-3 minutes at $20 \pm 2^\circ\text{C}$.

Remarks:

After reliability test per item 7,8,9,10 in prior to the test as specified, the transformer / coil would be exposed to the room temperature for 1-2 hours, the component meets all requirements according to this specification.

1.Recommended Lead Free IR Reflow Curve



Item	Profile Feature	Sn-Pb Eutectic Assembly	Pb-Free Assembly
1	Preheat/Soak Temperature Min (T_{smin}) Temperature Max (T_{smax}) Time (ts) from (T_{smin} to T_{smax})	100 °C 150 °C 60-120 seconds	150 °C 200 °C 60-120 seconds
2	Ramp-up rate (T_L to T_p)	3 °C/second max.	3 °C/second max.
3	Liquidous temperature (T_L) Time (t_L) maintained above T_L	183 °C 60-150 seconds	217 °C 60-150 seconds
4	Peak package body temperature (T_p)	For users T_p must not exceed the Classification temp in Table 4-1 (IPC/JEDEC J-STD-020D.1). For suppliers T_p must equal or exceed the Classification temp in Table 4-1 (IPC/JEDEC J-STD-020D.1).	
5	Time (t_p)* within 5 °C of the specified classification temperature (T_c), see Figure 5-1 (IPC/JEDEC J-STD-020D.1).	20* seconds	30* seconds
6	Ramp-down rate (T_p to T_L)	6 °C/second max.	6 °C/second max.
7	Time 25 °C to peak temperature	6 minutes max.	8 minutes max.
* Tolerance for peak profile temperature (T_p) is defined as a supplier minimum and a user maximum.			

Non-Use Certificate of Conformity

1. Basic Information

Company Name	Group-Tek	Part Name	PDT25239SR	Approval	
Company Code		Part No.		Name	
Person in charge	Jiang Wang	Submission Date	2022-11-01	Signature	联泰兴 2022-11-01 Jiang Wang
Contact	0755-29810619 turn 812				
Address	1 Block,Weitai Rd.,Yingrenshi Industry Park, Shiyan,Baoan,Shenzhen,China				

2. Contained Material

Division	Material(Substance)	Whether Y or N	
		Y(Material Name, ppm)	N
Class 1	Cadmium		N
	Lead	15ppm	Y
	Mercury		N
	Hexavalent chrome		N
	PBB(polybromobiphenyl)		N
	PBDE(polybrominated diphenyl ethers)		N
	Biz(2-ethylhexyl)Phthalate (DEHP)		N
	Butyl Benzyl Phthalate (BBP)		N
	Dibutyl Phthalate (DBP)		N
	Diisobutyl Phthalate (DIBP)		N
Class 2	PCBs, PCTs, PCNs		N
	Asbestos compounds		N
	Formaldehyde		N
	Shot-chain chlorinated paraffin		N
	Organotin compounds		N
	PFOS(Perflurooctane Sulfonates)		N
	Nickel compounds		N
	DMF(Dimethylfumarate)		N
	Arsenic compounds		N
	Azo compounds		N
	PFOA(Pentadecafluorooctanoic acid)		N
	PAHs(Polycyclic Aromatic Hydrocarbons)		N
	Bisphenol A		N
	HBCDD(Hexabromocyclododecane)		N
Class 3	TBBP-A		N
	Brominated / Chlorinated flame retardant		N
	PVC (Poly vinyl chloride)		N
	Phthalate (except 4 substance of RoHS)		N
	Antimony compounds		N
	Beryllium compounds		N
	Cobalt dichloride		N
	SVHC(Substance of very high concern)		N

We are hereby certificate conforming to Hanwha Techwin standard for control of substances with environmental impacts for supplied products, parts, materials, packages and so on.

(We are confirmed by referring "Attachment.Regualtion_Material".)

UL Document

1. Bobbin (E59481)
2. Wire (E255839)
3. Tape (E17385)
4. Glue (E218090)

T375J(G5)(G6) - Plastics - Component

Plastics - Component
File Number: E59481

Yellow Card® 

COMPANY

CHANG CHUN PLASTICS CO LTD
No 8 Huaxi Rd
Daliao District
Kaohsiung City, 83164 Taiwan

MODEL INFO

LONGLITE: T375J(G5)(G6)

Phenolic Molding Compound (PMC), furnished as granular material

- (G6) – The GWFI rating observed from representative thickness & color including: Thickness at 0.45mm is 960C (BK); Thickness at 0.75mm is 960C (BK); Thickness at 3.0mm is 960C (BK).
- (G5) – The GWIT rating observed from representative thickness & color including: Thickness at 0.45mm is 900C (BK); Thickness at 0.75mm is 960C (BK); Thickness at 3.0mm is 960C (BK).

FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability		ANSI/UL 94
0.45 mm, Color: BK, BN	V-0	
0.75 mm, Color: BK, BN	V-0	
1.5 mm, Color: BK, BN	V-0	
3.0 mm, Color: BK, BN	V-0	

ISO/IEC FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability		IEC 60695-11-10
0.45 mm, Color: BK, BN	V-0	
0.75 mm, Color: BK, BN	V-0	
1.5 mm, Color: BK, BN	V-0	
3.0 mm, Color: BK, BN	V-0	

ELECTRICAL PROPERTIES	VALUE	TEST METHOD
Hot-wire Ignition (HWI)		UL 746A
0.45 mm	PLC 1	
0.75 mm	PLC 1	
1.5 mm	PLC 0	
3.0 mm	PLC 0	
High Amp Arc Ignition (HAI)		UL 746A
0.45 mm	PLC 0	
0.75 mm	PLC 0	
1.5 mm	PLC 0	
3.0 mm	PLC 0	
Comparative Tracking Index (CTI)	PLC 3	UL 746A
High Voltage Arc Tracking Rate (HVTR)	PLC 4	
High Voltage, Low Current Arc Resistance	PLC 5	

THERMAL PROPERTIES	VALUE	TEST METHOD
Relative Thermal Index - Electrical Strength		UL 746B
0.45 mm	150 °C	
0.75 mm	150 °C	
1.5 mm	150 °C	
3.0 mm	150 °C	
Relative Thermal Index - Mechanical Impact		UL 746B
0.45 mm	150 °C	
0.75 mm	150 °C	
1.5 mm	150 °C	
3.0 mm	150 °C	
Relative Thermal Index - Mechanical Strength		UL 746B
0.45 mm	150 °C	
0.75 mm	150 °C	
1.5 mm	150 °C	

SHING SHUN MAGNET WIRE (HUIZHOU) CO LTD

Building A7, No.19 JinZhong Road,, Huinan High-Tech Ind Zone, Huiao Highway, Huihzou Guangdong 516025 CN

UEW, QA-

<u>Mark Designation</u>	<u>ANSI Type</u>	<u>Temp (°C)</u>	<u>Basecoat</u>	<u>Topcoat</u>	<u>Bondcoat</u>
UEW, QA-	MW 82-C	180	Polyurethane	-	-
	MW 79-C	155[#]	Polyurethane	-	-
	MW 75-C	130[#]	Polyurethane	-	-

* - May be prefixed or suffixed by 0,1, 2, or 3 to indicate coating thickness.

[#] - The magnet wire may perform better than the rating reflects and may not be suitable for insulation system, varnish or end-product testing.
Further consideration is necessary prior to its use in testing.

Report Date: 2006-03-31

Last Revised: 2020-12-09

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3M COMPANY

ELECTRICAL MARKETS DIV (EMD), 13011 McCallen Pass Bldg C, Austin TX 78753

1350FY-1 (b)

Polyester film/mat composite insulating tapes

<u>Color</u>	<u>Temp</u> <u>(°C)</u>	<u>Functional</u> <u>Use +</u>	<u>CTI</u> <u>ASTM</u> <u>D3638</u>	<u>CTI</u> <u>IEC</u> <u>112</u>	<u>Exposed</u> <u>Side</u>
Yellow	130	A, B, C, D, E, J	1\1	II\II	Adhesive\Film
(b) - May be marked "Comparative Tracking Index (CTI)) equal to or greater than 400V but less than 600V, UL840 Material Group II, when tested to IEC60112 on both sides of tape"					
+ - See the Guide Information for alphabetical end-use Functional Use codes.					

Report Date: 1975-03-26

Last Revised: 2022-02-10

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E-500 (XX) - Plastics - Component

Plastics - Component
File Number: E218090

Yellow Card® 

COMPANY

DONGGUAN EATTO ELECTRONIC MATERIAL CO LTD
GUANWAN INDUSTRIAL
XINWAN
HUMEN TOWN
DONGGUAN, GUANGDONG 523938 China

MODEL INFO

E-500 (XX)
Epoxy Molding Resin (EP - Molding), furnished as paste
(XX) – Denotes two letters, AA - ZZ, representing a customer code of Dongguan Eatto.

FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability (3.0 mm, Color: ALL)	V-0	ANSI/UL 94
ISO/IEC FLAMMABILITY PROPERTIES	VALUE	TEST METHOD
Flammability (3.0 mm, Color: ALL)	V-0	IEC 60695-11-10
THERMAL PROPERTIES	VALUE	TEST METHOD
Relative Thermal Index - Electrical Strength (3.0 mm)	130 °C	UL 746B
Relative Thermal Index - Mechanical Impact (3.0 mm)	130 °C	UL 746B
Relative Thermal Index - Mechanical Strength (3.0 mm)	130 °C	UL 746B













