



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-A6210-DescriptionUL
Figure-12-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 Video Recorder
Model:	WRN-2110SB1, WRN-2110B1
Rating:	AC 100-240 Vac, 50/60 Hz, 3.5 A (For model WRN-2110SB1) AC 100-240 Vac, 50/60 Hz, 0.9 A (For model WRN-2110B1)
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: Seohwan Kim / Project Handler Reviewed By: Seungtea 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 VIDEO RECORDER. This unit was supplied by AC mains and consist of main board, 4 hard disk-drive and numerous components mounted on PCB.

Model Differences

WRN-2110SB1 is basic model: PoE output functionality

WRN-2110B1 is identical to basic model except to no PoE output

Test Item Particulars

Product group	end product
Classification of use by	Instructed person
Supply Connection	AC Mains
Supply tolerance	+10%/-10%
Supply connection – type	pluggable equipment type A - appliance coupler
Considered current rating of protective device	16 or 20 A; Location: building
Equipment mobility	stationary
Over voltage category (OVC)	OVC II
Class of equipment	Class I
Special installation location	N/A
Pollution degree (PD)	PD 2
Manufacturer's specified Tma (°C)	40
IP protection class	IPX0
Power systems	TN
Altitude during operation (m)	5000 m
Altitude of test laboratory (m)	2000 m or less
Mass of equipment (kg)	7.7

Technical Considerations

- ☐ The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of : 40 °C

- ☐ The product is intended for use on the following power systems : TN
- ☐ Considered current rating of protective device as part of the building installation (A) : 16 or 20
- ☐ Mains supply tolerance (%) or absolute mains supply : +10%/-10%
- ☐ The equipment disconnect device is considered to be : Appliance inlet, Switch
- ☐ The following circuit locations (with circuit/schematic designation) were investigated as a limited power source (LPS) : All output ports
- ☐ The following are available from the Applicant upon request : Installation (Safety) Instructions / Manual

Additional Information

4791208107

- Tests were not considered necessary to determine compliance with Standard UL 62368-1, 3rd Ed, 2021-10-22 and CAN/CSA C22.2 No. 62368-1:19, 3rd Ed, 2021-10-22 based upon previous evaluation under the IEC 62368-1: 2018 for the CB Scheme Test Certificate, Ref. Certi. DK-152121-UL and Report Ref. No. C24IA013-M0A0 dated 2024-04-11 were prepared by UL Solutions (Demko), Borupvang 5A DK-2750 Ballerup, DENMARK

- Maximum Normal Load: Front USB load: 5.0 Vdc, 0.5 A (2 EA), Rear USB load: 5.0 Vdc, 0.9 A (2 EA) and connected with HDD (4 EA) HDD were saving all data

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 or Recognized Company's name, Trade Name, Trademark or File Number
Equipment identification marking – model identification	Model Number
Equipment rating marking – ratings	Input Ratings (voltage, frequency/dc, current/power) Output Ratings (voltage, frequency/dc, current/power)
Symbols - On/Off switch	Switches to be marked with  symbol for "ON" (IEC 60417-5007) and  symbol for "OFF" (IEC 60417-5008)
Class I equipment -Terminal for main protective earthing	Provided adjacent to the main protective earthing terminal  (IEC 60417-5019)

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

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
Power Supply	DELTA ELECTRONICS INC	DPS-300AB-101 XX (X = 0-9, A-Z or blank)	Input: 100-240 V~, 50- 60 Hz, 5.5 A; Output: +12V/ Max. 12.5A, -53V/ Max. 2.83A, combine Max. 300W at start up status; +12V/ Max. 12.5A, - 53V/ Max. 3.96A, combine Max. 360W at continuous status.	QQGQ2/8	UL (E131881)	
Power cord set	LONGWELL	LP-30B + SVT 18AWG 3C+ LS-13	Detachable, min 1.5 m, max. 2.4 m long, rated 125 V, 10 A, 18/3 AWG, 60 deg.C, SVT type flexible cord. One end with NEMA 5-15P other end with appliance coupler.	ELBZ7	UL (E55349)	
Power cord set - Alternate	WEIHAI HONG LIN ELECTRONIC CO LTD	HL-002S + SVT 18AWG X 3C + HL- 004	Detachable, min 1.5 m, max. 2.4 m long, rated 125 V, 10 A, 18/3 AWG, 105 deg.C, SVT type flexible cord. One end with NEMA 5-15P other end with appliance coupler.	ELBZ7	UL (E254927)	
Power cord set - Alternate	KOREA KDK CO LTD	KKP-30 + SVT 3/18AWG + KKS- 16A	Detachable, Min. 1.5 m, Max. 2.4 m long, rated 125 V, 7 A, 18/3 AWG, 105 deg. C, SVT type flexible cord. One end with NEMA 1-15 other end with appliance coupler.	ELBZ7	UL (E58075)	

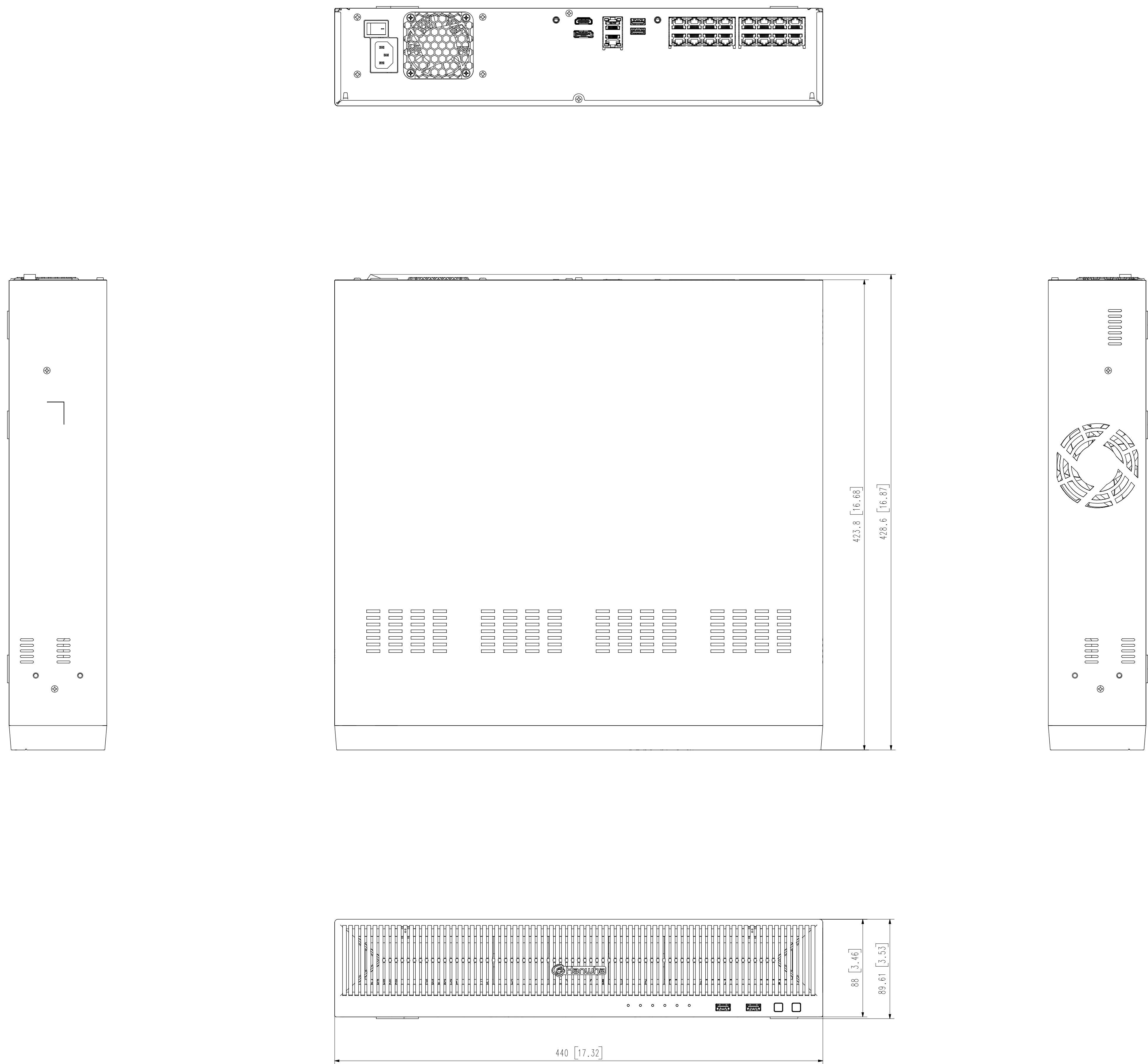
Power cord set - Alternate	CHANGZHOU HONG CHANG ELECTRONICS CO LTD	DTII-3P-15+UL SVT 18AWG/3C +DTII-3P-04	Detachable, Min. 1.5 m, Max. 2.4 m long, rated 125 V, 10 A, 18/3 AWG, 105 deg. C, SVT type flexible cord. One end with NEMA 5-15P other end with appliance coupler.	ELBZ7	UL (E205766)	
Case-Top (Metal)	Interchangeable	Interchangeable	SECC, Min. 0.6 mm thickness, see enclosure for more dimension.	-	-	
Case-Bottom (Metal)	Interchangeable	Interchangeable	SECC, Min. 1.0 mm thickness, see enclosure for more dimension.	-	-	
Front Cover(Plastic)	LOTTE CHEMICAL CORPORATION	HN-1068(+)(f1)	Min. 2.5 mm thickness, rated Min. V-0, 130 deg. C	QMFZ2/8	UL (E115797)	
USB Protection IC (USB 2.0 : U18, U8 / USB 3.0 :U20, U73)	DIODES INC	AP2182A	Rated 2.7–5.5 Vdc, 1.5 A	QVGS2	UL (E322375)	
DC Fan (Main board)	SUNONWEALTH ELECTRIC MACHINE INDUSTRY CO LTD	HA40101V4-1(Y)	Rated voltage: DC 12 V, Rated current: 0.037 A, speed: 5000±15 %RPM	GPWV2/8	UL (E77551)	
DC Fan (near main board)	MinebeaMitsumi Inc.	08025SS-12M-(d)(e)-(f)	Rated voltage: DC 12 V, Rated current: 0.15 A, speed: 2700 RPM (typ), 2500 RPM (min)	GPWV2/8	UL (E89936)	
Line filter (T9)	TNC CO.,LTD	CV650050SKA	5.0 mH, 120 deg. C	-	-	
Opto-coupler (LS1)	LITE-ON Technology Corporation	LTV-816	Isolation Voltage: 5 300. Max. Operation Temperature: 110 deg. C	FPQU2	UL (E113898)	

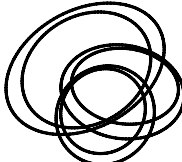
Lithium Battery (J2E1)	WUHAN LIXING (TORCH) POWER SOURCE CO LTD	CR2032	Lithium / manganese dioxide (Coin), Non-rechargeable, 3.0 Vdc, Abnormal Charging Current 10 mA.	BBCV2	UL (MH26236)	
Reverse Current Protection Circuit for Lithium Coin Battery (J2E1)	Interchangeable	Interchangeable	Diode (D20, Max reverse voltage 80 V, Max reverse current 0.5 uA) and resistor (R1R6, 1.0 kohm) in series.	-	-	
Heatsink	Interchangeable	Interchangeable	Aluminium, Approx. Overall size of 40 by 40 by 17.5 mm, Min. 0.5 mm thickness	-	-	
Label	Interchangeable	Interchangeable	Suitable for use on each type of surface to which applied, rated for maximum and minimum surface temperature specified, or Min. 40 deg. C if not specified.	PGDQ2 or PGJ12	UL	
PWB	HANNSTAR BOARD CORP	MV-4	Min. V-0, 130 deg. C	ZPMV2/8	UL (E89382)	
PWB - Alternate	Interchangeable	Interchangeable	Min. V-0, 130 deg. C	ZPMV2/8	UL	

Enclosures

Type	Supplement Id	Description
Photographs	03-01	External View - 1
Photographs	03-02	External View - 2
Photographs	03-03	Internal View
Photographs	03-04	Rear View
Photographs	03-05	Main Board - Top
Photographs	03-06	Main Board - Bottom
Photographs	03-07	DC fan
Photographs	03-08	SMPS
Diagrams	04-01	Enclosure Diagram
Manuals	06-01	Manual
Miscellaneous	07-01	Label (model WRN-2110SB1)
Miscellaneous	07-02	Label (model WRN-2110B1)

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

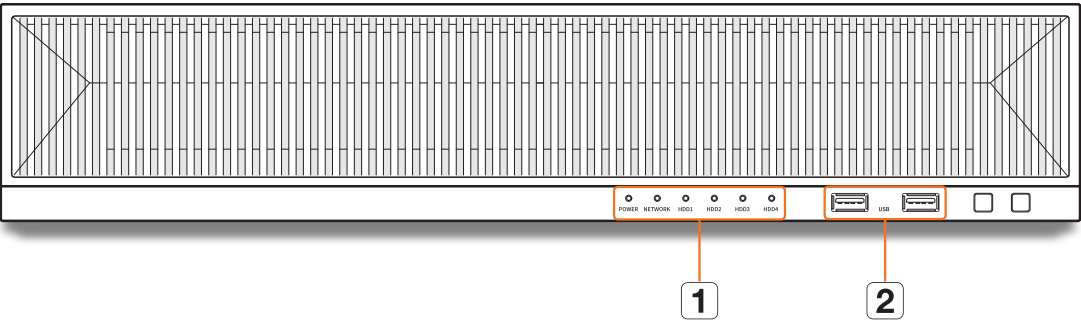


3		
2		
1	WRN-2110SB1	'24.02.16
No.	MODEL NAME	DATE
Unit:mm[inch] SCALE:1/2		 Hanwha Vision

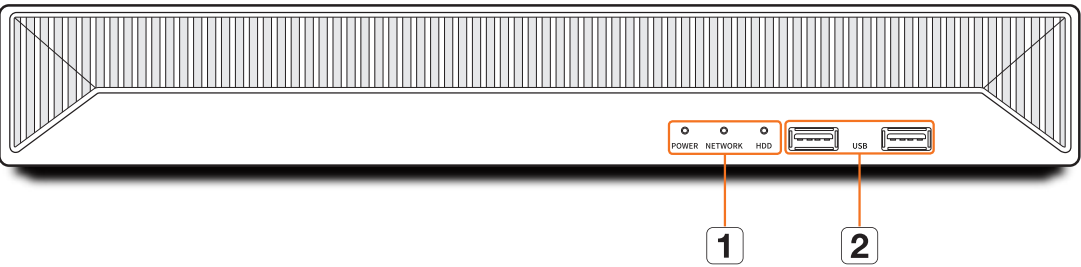
The following Page(s) are related to Manuals-01. The next supplement, if applicable, will be identified with a new Supplement Page Heading.

Part Names and Functions (Front)

WRN-2110SB1/WRN-2110B1



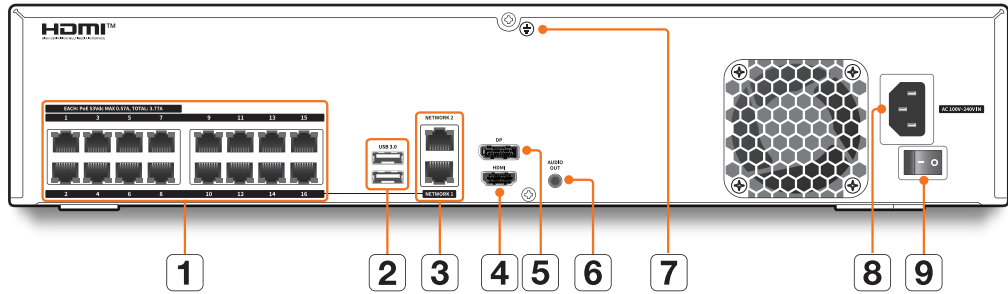
WRN-2010S



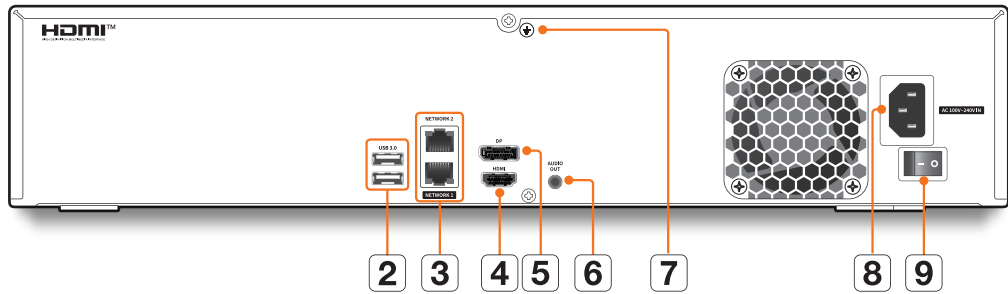
Name		Functions
1	LED Indicator	POWER : Shows the power ON/OFF status.
		NETWORK : Displays both network connection and data transfer status.
		HDD : Displays the connection status of the HDD. When the HDD is connected normally, the LED lights up.
2	USB	Connects the USB devices. (USB 2.0 supported)

Part Names and Functions (Rear)

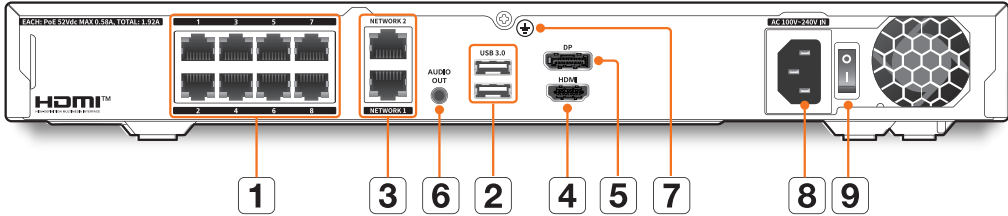
WRN-2110SB1



WRN-2110B1



WRN-2010S



Name		Functions
1	PoE	Supply power to the camera.
2	USB 3.0	Terminal that connects a USB type device.
3	NETWORK 1	Terminal used to connect a camera and receive video signals from the camera.
	NETWORK 2	Terminal that is recommended for network connection and access to the Web Viewer.
4	DP	DP connector port.
5	HDMI	HDMI connector port.
6	AUDIO OUT	Audio output port.
7	Ground Connection	Port for connecting a separate ground cable. For safe handling of the device, please add a ground wire.
8	Power	Terminal to connect power to.
9	Power Switch	Power on/off switch.



- When connecting the AC power cord or turning on the power switch, there may be a luminous (light) phenomenon inside the SMPS. This phenomenon is the normal operation of the SMPS protection element.

Installing the HDD

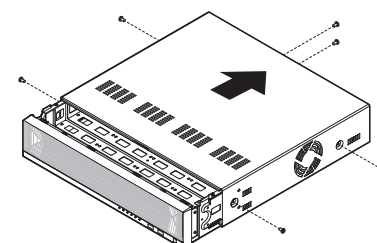


- If you are adding a new or previously used HDD to this product in addition to the HDD(s) originally installed, format the new HDD manually in the product before use.
- For replacement or installation of an additional HDD, you must contact your dealer or our customer center.

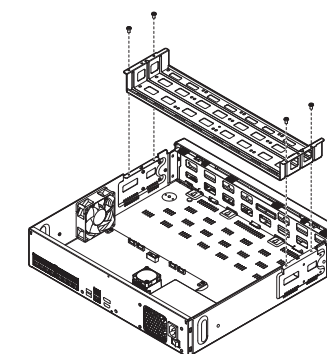
WRN-2110SB1/WRN-2110B1

- It is an example of the WRN-2110SB1 model.

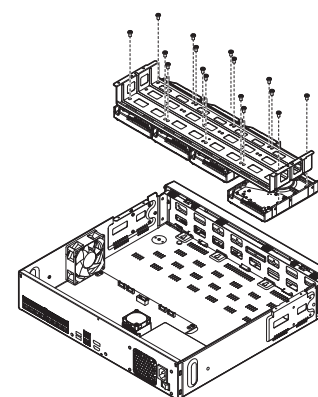
- 1 Remove the screws from the left/right sides and back side, and push the cover back to release it.



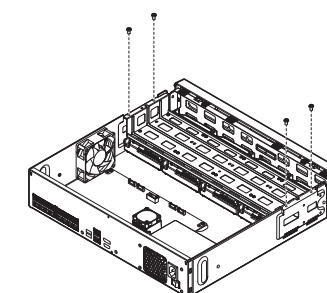
- 2 Remove the screws from the left/right sides and release the bracket.



- 3 Mount an HDD into the bracket, and fix it using screws.

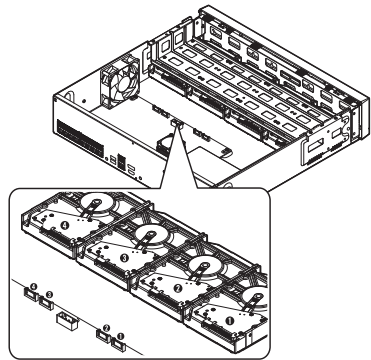


- 4 Fix the HDD-mounted bracket to the recorder using screws.



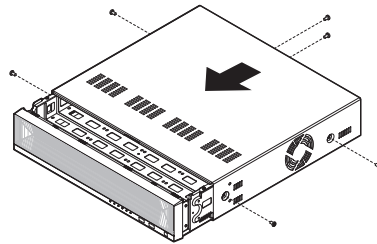
- 5** Connect the SATA/power cable of the HDD to the connector of the main board.

- Refer to the figure below for the HDD location number and connector number.



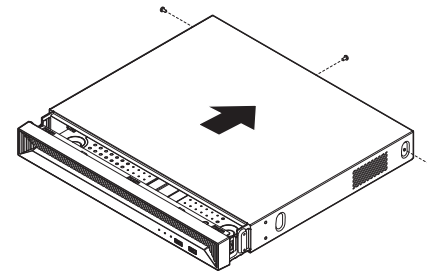
- 6** Make sure that there is no problem in the connection port and routing inside the recorder, and then fix it using screws after closing the cover.

- When closing the cover, be careful not to damage the cable.

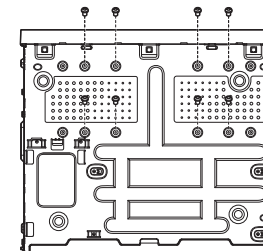


WRN-2010S

- 1** Remove the screws from the left/right sides and back side, and push the cover back to release it.

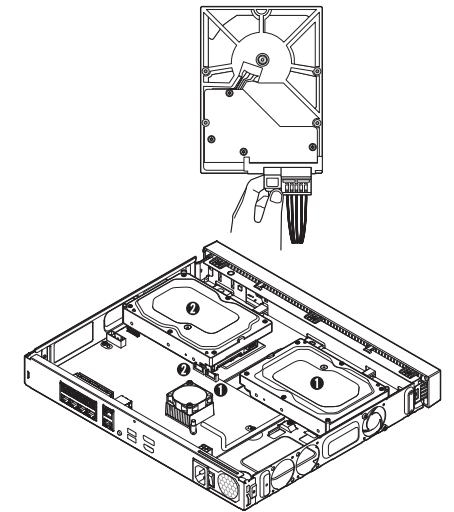


- 3** Use the screws to fix the HDD to the bottom of the recorder.



- 2** Connect the SATA/power cable of the HDD to the connector of the main board.

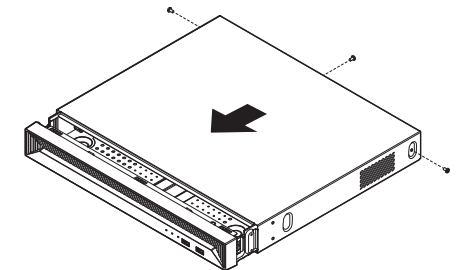
- Refer to the figure below for the HDD location number and connector number.



- !** ■ Gently press the connector before removing the HDD. Do not force to pull the cable.

- 4** Make sure that there is no problem in the connection port and routing inside the recorder, and then fix it using screws after closing the cover.

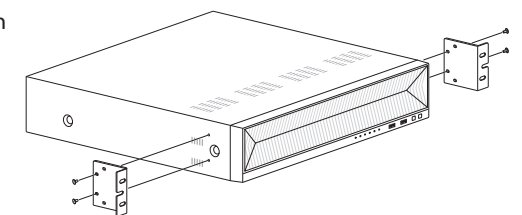
- When closing the cover, be careful not to damage the cable.



Installing the Rack

Install the Bracket-Rack as shown in the figure, and then fasten the screws on both sides.

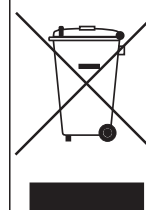
- Fix the T screw not to be loosened by vibrations.



e.g. WRN-2110SB1



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.

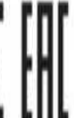


Correct disposal of batteries in this product

(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.

 S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-01  MAC ADDRESS 2: XX-XX-XX-XX-02 XX-XX-XX-XX-03	WRN-2110SB1/KEU  S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-01  MAC ADDRESS 2: XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-03
NETWORK VIDEO RECORDER MODEL: WRN-2110SB1 AC 100-240V~ 50/60Hz 3.5A M/C: WRN-2110SB1/KEU Fac. ID: D  DATE S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-01 MAC ADDRESS 2: XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-03 CAN ICES-3(A)/NMB-3(A) MADE IN KOREA Hanwha Vision Co., Ltd.	       I.T.E. US LISTED 9T96 E158873      PT03-002663T

NETWORK VIDEO RECORDER MODEL: WRN-2110SB1 AC 100-240V~ 50/60Hz 3.5A M/C: WRN-2110SB1/KEU Fac. ID: D  DATE S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-01 MAC ADDRESS 2: XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-03 CAN ICES-3(A)/NMB-3(A) MADE IN KOREA Hanwha Vision Co., Ltd.	       I.T.E. US LISTED 9T96 E158873      PT03-002663T
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 S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-XX-01  MAC ADDRESS 2: XX-XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-XX-03	WRN-2110B1/KEU  S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-XX-01  MAC ADDRESS 2: XX-XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-XX-03
NETWORK VIDEO RECORDER MODEL: WRN-2110B1 AC 100-240V~ 50/60Hz 0.9A M/C: WRN-2110B1/KEU Fac. ID: D  DATE S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-XX-01 MAC ADDRESS 2: XX-XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-XX-03 CAN ICES-3(A)/NMB-3(A) MADE IN KOREA Hanwha Vision Co., Ltd.	       I.T.E. US LISTED 9T96 E158873     PT03-002663T

NETWORK VIDEO RECORDER MODEL: WRN-2110B1 AC 100-240V~ 50/60Hz 0.9A M/C: WRN-2110B1/KEU Fac. ID: D  DATE S/N: Serial No. MAC ADDRESS 1: XX-XX-XX-XX-XX-01 MAC ADDRESS 2: XX-XX-XX-XX-XX-02 MAC ADDRESS 3: XX-XX-XX-XX-XX-03 CAN ICES-3(A)/NMB-3(A) MADE IN KOREA Hanwha Vision Co., Ltd.	       I.T.E. US LISTED 9T96 E158873     PT03-002663T
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